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Medical Education in Transition

The role the Association's Teaching Institutes can play in exploring and restructuring medical education.

GEORGE PACKER BERRY

AT MID-CENTURY, as one scans 50 years of medical progress, it is the phenomenal growth of the natural sciences that stands out clearly as the driving force responsible for the extraordinary advances that have been made in medicine. It has led to an enormous increase in man's understanding of his physical constitution and to effective measures for treating a host of diseases that beset it. This is common knowledge. We tend to see less clearly, at least we tend to forget, how the phenomenal growth of science has complicated the teaching of medicine. I propose to explore this complex problem. I wonder how many of you share my thoughts about the factors that have precipitated the difficulties in which we find ourselves as we grapple with the massive medical curriculum which has grown more by accretion than by design.

Medicine has had an impact on our culture that is forcing the doctor to shift his focus in relation to the day-to-day care of the sick. This is accentuating a host of considerations heretofore thought of as lying beyond the scope of medicine. In extending the life expectancy by a third since 1900, the medical profession and its many allies have at the same time contributed in unanticipated ways to the creation of new and difficult problems. Now we must deal with these problems and with their far-reaching implications for the teaching and practice of medicine in the second half of the century. Today's generation of doctors as they enter medical practice find a very different environment from that prevailing 50 years ago. The whole atmosphere has changed, yet the medical curriculum has not evolved to meet these changes. On the contrary, the curriculum continues to adhere to a pattern that was designed in different times and under different circumstances.

IT IS MY PURPOSE in the present discussion to invite your attention to what I believe is our central problem: the critical re-examination of

Dr. Berry, immediate Past President of the Association of American Medical Colleges, is Professor of Bacteriology and Dean of Harvard Medical School. This article is an extension of remarks included in his Presidential Address given at the Sixty-Third Annual Meeting of the Association in Colorado Springs, November 10-12, 1952.

medical teaching. I wish to focus on three aspects of this problem.

I. The teaching of medicine needs to be re-examined in terms of providing for the medical student better opportunities to learn how to serve the patient more effectively. Medicine today is short of this goal.

II. In a number of medical schools provocative experiments, aimed at making such revisions in our teaching programs as are consistent with a growing understanding of the whole patient rather than just a part of the patient, are proceeding vigorously. Exactly what the outcome of these experiments will be, no one can say. They are, after all, *experiments*. But they are also much more than this. They are concrete evidence that we are at length coming to grips with our central problem, not yet in a definite way for we still do not know many answers, but at least in a way that may lead us to important answers.

III. From a long-range viewpoint, such experiments in teaching will help us to assemble the evidence we must have, but it will take more than a mere assemblage to enable us to work through existing complexities to constructive solutions. To succeed, as I see it, an objective exploration of the entire structure of medical education is required. Believing this, the Association's Executive Council established in 1951 a Committee on Planning for Teaching Institutes.[a] With the enthusiastic support of the Executive Council, this committee has arranged a series of annual conferences on the teaching of medicine. At these conferences—Teaching Institutes—we propose to explore our whole program of medical education, to scrutinize all the student's opportunities in college, in medical school, in the hospital, and thereafter, which permit him to become the competent physician that society expects him to be.

We are proposing, in short, that all of us examine critically the present structure of medical education and search for ways to make it more serviceable. The Teaching Institutes are envisioned as instruments for helping us to extirpate from the curriculum what has become archaic, add what is new of significance, in order to restructure it around an essential scientific core consonant with advancing knowledge. Without minimizing any of the scientific aspects of medicine, we hope to find ways of enabling medical students to acquire a better understanding of the *total* patient in keeping with the mounting conviction that psychological and environmental factors are of consequence in health and disease. It is this plan—the attempt to restructure the teaching program to accommodate comprehensive medicine without diminishing "scientific" medicine—that I call particularly to your attention in my present address.

I shall try to show you how the Institutes can bring to fruition ideas about medical education that have been appearing during the past decade. The potentialities of the Institutes are best appreciated, I believe, against a background of medicine in the present century and of certain recent experiments in medical teaching. With the material already at hand and new material now in preparation, I think you will agree that we are past the point where we need

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a. Membership of the Committee: George Packer Berry, Harvard, Chairman; Stanley E. Dorst, Cincinnati; C. N. H. Long, Yale. The author takes pleasure in expressing his great indebtedness to his fellow committee members for many of the thoughts expressed in the present address. He points out, however, that they should not be held responsible for any of the statements that he has made.

conferences simply to talk about what we *might* do. There have already been too many such conferences! They serve little purpose other than providing additional volumes for the musty shelves in the dean's office. As we envision them, on the other hand, our Institutes *can* be more than convenient occasions for friends to foregather. They have specific objectives. The burden is on us teachers and deans, to measure up to these objectives.

I.—THE PROBLEM

THE PERIOD from 1910 to 1950 is referred to so often as the "golden age of medicine" that I sometimes wonder if we, as doctors, have forgotten that all that glisters is not gold. Unquestionably, this is a period that witnessed in terms of the control of infectious disease, more progress in 40 years than was made in all the previous 2,300 years stretching back to Hippocrates. For the 6 Americans in service who died from disease in the last war per year, 160 died in World War I, 250 in the Spanish-American War and 650 on the Northern side in the Civil War.[1] Twenty years ago Chicago had 6,012 cases of diphtheria and 513 deaths; in 1950, 5 cases and no deaths.[2] Any of us could multiply such examples *ad infinitum*. They add up to the fact that the conquest of infectious disease in the present century is one of man's most dramatic achievements, unparalleled in any other period in history, a monument to the ingenuity and imagination, not only of the physician, but of the biologist, chemist, physicist, sanitary engineer, public-health worker, to name some of them.

I like the unusual way in which Harvard's late, distinguished physiologist, Lawrence Henderson, once described the progress of medicine. As the first decade of the century ended, it probably became true in this nation, he thought, that a random patient with a random disease consulting a doctor chosen at random has better than a 50-50 chance of profitting from the encounter.[3] One may safely assume that the odds in favor of the patient have climbed appreciably since 1910, although all of us are prepared to concede, I hope, that we will have a long way to go before we can offer all patients the kind of service to which we believe they are entitled, and which they are beginning to demand as a basic human right.

Something Is Missing

Even with all the vast accomplishments since the Flexner Report, there is a growing realization that something important is missing. We have antibiotics and hormones, vitamins and vaccines, anesthesia and modern surgery. Everything we have come to feel a medical student must know to understand and use this modern armamentarium of the physician we have tossed into a hopper carrying the imposing name "curriculum." The word curriculum, of course, literally means "a running" or "a race course." As I contemplate the present plight of a medical student, I see a new significance in this word! If we are to serve society in the best way, our elaborate curriculum must be restructured, for as it is now constituted it does not permit today's student to become tomorrow's physician as we envision him. Ward Darley, my successor as President of the Association, puts this succinctly:

"The rapid scientific and technical development of medicine has been forcing medical educators to be concerned constantly with the question of revising the subject material of their basic and applied courses. The result

has been a steady increase in both the total course content and in the length of the curriculum. The time has come when these two expedients can no longer adequately meet the situation. This is so because in addition to the problem of putting an ever increasing quantity of information into the curriculum within a certain length of time, it is now realized that more attention should be given to the significance of the interplay that is developing between medicine and our socio-economic structure."[4]

Demand for Good Health

This situation comes upon us at a time when the public is making greater and greater demands that the doctor live up to the enormous responsibilities entrusted to him. Let me quote a few words from a talk that I gave three years ago: "Freedom of opportunity for good health is a basic human right. That this opportunity for good health should be provided for all is an insistent and growing demand. It is a major social and political fact today."[5] Whether or not we like it, we must deal with this important fact. The sooner we come to recognize this social phenomenon—that the people believe they are entitled to good health and are demanding it—the sooner we shall be able to convert the vast energies of our culture into more creative medical programs. Let us not forget that if we do not do some very hard thinking and acting right now, some one whom we believe to be less competent than we will do the acting for us without thinking. If we believe that we are the best architects, it is up to us to produce the plans.

We use the phrase "good health" every day, but exactly what do we mean? We need to know as we set about restructuring medical education. I happen to like the definition of the state of health recently proposed by J. Howard Means:

"I would define health as that state in which the organism, human or other, or the community for that matter, has achieved as successful an adjustment, intellectual and emotional as well as physical, to its environment, as its constitution and the equipment available to it, permit. By definition an individual who has achieved such an adjustment is not only healthy, but happy. He who is not happy is at odds with some one or something; he is not, therefore, in perfect adjustment. Often health and happiness result from the successful adjustment to very trying circumstances. Obviously in the attainment of health, as I have defined it, many forces are involved besides medicine. All the forces of our culture are involved, but the role of medicine is a large one . . ."[6]

Period of Critical Growth

The important question before us at this time is to restructure medical education in such a way that the student appreciates the role medicine can play in achieving good health. The extent to which we can approach this challenge with open minds will determine how successfully we meet our responsibilities. Lester J. Evans attempted to put this issue in perspective when he said:

"All evidence points to the fact that medicine is now in a period of critical growth. I use the word 'medicine' to include that wide spectrum of knowledge, professional skills, technologies and physical facilities which in this modern day can be brought to bear in the care of the sick and the prevention of illness. This period of critical growth, which is still in its early stages, is not yet clearly enough defined to be seen in all its proportions, but I believe that in social and scientific significance it will prove to be as profound as that period stretching roughly from 1890 to 1910 which can now be viewed quite clearly in the perspectives of history."[7]

I agree with Dr. Evans. One of the main purposes of the present talk is to bring forward the evidence that seems to me to establish the validity

of this viewpoint. Happily, this outlook has been adopted in other quarters. Donald G. Anderson has observed:

"The demonstration and interpretation by the medical schools of medicine's role in the community is already taking many forms. One of the most significant is the renewed attention that is being focused on the patient as a whole . . . this concept, I believe, stems not only from physiological and psychiatric evidence of the interdependence of organs and the organism but also from a broadening sense of professional responsibility, which assumes that the physician's task does not end with the relief of the patient's immediate complaint but that the physician will continue to exert himself on behalf of the patient until the fullest possible degree of rehabilitation, in the broadest sense of the word, has been achieved."[8]

Comprehensive Medicine

An analysis reaching to the core of the problem facing medical education at mid-century is to be found in the "Annual Report" of the Commonwealth Fund for 1952. Unusual clarity of thought and expression, in my opinion, characterize the following excerpts from this Report:

"Medical education, for which a new pattern was set by the Flexner report of 1910, may now be in the second of three phases of adjustment. The first . . . has had scientific medicine as its objective and slogan, specialization as its dominant pattern, and the university medical center as its preferred instrument. The second, now unfolding, is a phase of transition in which the concept of comprehensive medicine is beginning to modify the definition of scientific medicine, in which there is some reaction against the extremes of specialization, and in which a few medical centers are beginning to re-examine their functions and achievements in a moderately objective way. . . . It is reasonable to hope that it will be followed by a third phase in which there will be some reconciliation between what has been called scientific medicine and what is now called comprehensive medicine, some better adjustment of the specialist to the generalist, and some restructuring of both medical education and medical care to fit the needs of a more knowledgeable social order. . . . Scientific medicine has hitherto been weakest in relation to the patient's affective life and his social environment. The behaviorial sciences are already helping the doctor to rely less on intuition and more on systematized knowledge as he approaches these facets of the patient. Not to make use of them so far as they are usable would seem to be unscientific. CAN SCIENTIFIC MEDICINE BE ANYTHING LESS THAN COMPREHENSIVE?" (capitals mine)[9]

In the Commonwealth Fund's "Annual Report" published two years previously, many of the developments that led to this analysis are dealt with incisively:

"There is increasing mobility among specialists: a biochemist is assigned to teach microbiology; a psychiatrist heads a general medical clinic; a clinician is called to a chair of physiology. . . . Curriculum committees are wrestling with the problem of decompartmentalizing undergraduate instruction. Here and there one finds new courses designed to give the student in his first year a better understanding of the individuals on whom medicine is practiced, or some new clue—now lacking—to what medicine really means. New clinical exercises take students out of the ward and clinics and into the patient's home. . . . Some medical schools are thinking seriously about their relation to their immediate environment, and are groping for new ways of demonstrating in that environment the kind of medicine they profess to teach. . . . These signs point to a refocusing of medical education on the student, and of medicine itself on the patient. If teaching is built around the needs of a student who is learning as he grows, and is not cut to a pattern determined by the competitive demands of medical school departments, it will gain coherence and pith. If the medicine that is taught is fitted to the needs of the patient on whom it is practiced, it will recognize and deal with, far more than it does today, all the forces that shape his life —forces from within him and forces from

his environment, continuously interacting and continuously affecting the balance between his sickness and his health."[10]

The statements which I have chosen to quote pull together a very considerable amount of current thinking about medical education. This thinking has led to a number of interesting and diversified experiments in medical teaching. Our immediate objective, as I see it, is to pursue vigorously the great opportunities afforded by these experiments now going on here and there at various levels of the curriculum. Beyond this, and perhaps most important of all, they can help us to explore the structure of the curriculum in order to find ways of adapting medical education to the needs of modern life. This does not mean diluting the time-tested principles of good education; it does mean orienting teaching methods to an understanding of the total patient in his setting. In brief, scientific medicine must become comprehensive medicine, yet not become thereby any less scientific.

II.—THE EXPERIMENTS

SEVERAL EXPERIMENTS in medical education today demand our closest attention, for they illustrate creative approaches to major aspects of the problem to be tackled. I have selected experiments about which I know a good deal either through my first-hand contact with them or through an intimate association with the teachers responsible for them. The Commonwealth Fund has fostered many of the ventures I shall describe. As a Director of the Fund I have had the fascinating experience of watching new ideas evolve in many minds and of following the transformation of these ideas into practical trials of prime significance for medical teachers. Medical education owes a great debt to the Commonwealth Fund and to the impetus stemming from the imaginative work of its staff.

These experiments attack the problem from different directions, some narrowly, some broadly. All are geared to their schools, yet all have implications that reach far beyond their schools. They are all in the best tradition of medicine, which calls for experimentation to meet pressing problems for which there are no adequate existing solutions. Although much of our progress will have to be based on trial and error, the experiments seek to find answers to carefully delineated questions. Better structuring of our teaching programs is almost certain to emerge, I think, but it does not follow that all medical schools will work out solutions in the same way. They should not. Uniformity is not the goal; regimenting either students or schools is not progress.

Harvard

I begin my account of the six experiments I have chosen to discuss by describing a program that is just getting under way at a school I am gradually learning to know. This program is built around a new kind of course which was designed to provide a full-time, intensive introduction to graduate study leading to the Ph.D. degree in any one of the medical sciences: anatomy, bacteriology, biochemistry, biophysics, pathology, pharmacology and physiology. Last September, 15 candidates were carefully selected for this experimental course, which has been designated "Fundamentals of the Medical Sciences." For these 15 candidates it constitutes the entire program for the first year of their graduate training in the Divi-

sion of Medical Sciences at Harvard.

The introductory course is a new departure in the training of candidates for the Ph.D. degree within the Division in that it is being taught *jointly*—as a single enterprise—by teachers from each of the basic science departments of the Medical School. These teachers, it should be noted, are also closely concerned with the teaching of medical students, especially during the students' so-called "preclinical" years. A word concerning the organization of the Division will make the significance of their dual role clear and will show also how favorable are the conditions in the Division for implementing the type of experiment under discussion.

The Division of Medical Sciences was established at Harvard in 1908, in the Faculty of Arts and Sciences, in order to provide facilities for advanced study and investigation leading to the degrees of M.A. and Ph.D. in the basic medical sciences. Its staff consists of the faculty members of the preclinical departments of the Medical School. Thus, the Division has access to all the facilities of the departments and research laboratories of the School and its seven affiliated hospitals, and to other related parts of the University, such as the Departments of Biology, Chemistry, and Physics of Harvard College. The Division is uniquely equipped, therefore, to implement the new course, because it pools the teaching and research resources of a group of departments in the Medical School and, through its staff members, maintains active contact with clinical teaching and research in the affiliated hospitals.

The Faculty of Medicine at Harvard has felt dissatisfied for some time with its educational programs for both medical students and graduate students. The Faculty has given full support, therefore, to the present opportunity to lay a foundation for improving the teaching of doctors of medicine by reworking the teaching of doctors of philosophy. With this support, the dynamic leadership of Eric G. Ball, Professor of Biological Chemistry and Chairman of the Division of Medical Sciences, has made the experimental course a vigorous, exciting enterprise in a few short months.

This pilot venture in teaching is aimed at extracting from the medical sciences the common principles and methods that are necessary for understanding and dealing with biological systems, for understanding the behaviour of living organisms. Yet it is also designed to bring the student into close contact with the literature, experimental techniques and fundamental concepts associated with each of these sciences. Its immediate objective may be briefly stated to be a better foundation for teaching and for a life of productive scholarship in the medical sciences. The broader orientation achieved through the joint approach will give tomorrow's teacher, it is hoped, a better insight into how to restructure the teaching of graduate students and medical students.

The course centers around the morphological and functional characteristics of cells, organs and organ systems. Each topic accepted for study is approached from the various points of view represented by the different medical sciences. Studies on bacteria, for example, include not only the usual morphological and pathological aspects, but also the biochemistry and biophysics of bacterial metabolism and the pharmacological interactions between bacteria and drugs. Studies on the kidney include

the comparative anatomy, cytology and histochemistry of the nephron, the chemistry of renal tubular transport systems, the physical aspects of urine formation and the mode of action of pharmacological agents on the kidney.

Efforts are also being made to learn how best to use in the course disciplines not conventionally included in "the basic medical sciences" or taught in medical school during the "preclinical" years. Experimental psychology is a case in point. Its introduction is a first step towards broadening the characterization of biological systems. Such characterization, particularly as it concerns human biology, is now incompletely presented in most medical schools.

Throughout the course problems are presented whose solution requires the simultaneous understanding and use of the several sciences. The subject matter is purposely limited in scope in that it does not attempt to cover all of the topics usually assigned to each of the participating departments. Rather, the subject matter is highly selected to permit treatment in an advanced fashion and from a research point of view. Another important reason for this selectivity and approach is the desire to give to the student ample time and orientation for solving the problems presented to him.

As our plans for the new course evolved, it became increasingly clear that a new kind of laboratory would be required. If the medical sciences were to be taught as a coherent whole, it would be not only inconvenient but highly illogical to split up the laboratory work among seven departmental laboratories which are located at the Harvard Medical School in several different buildings. A new type of laboratory was therefore designed. It was specially built and equipped to permit all the work to be concentrated in one room in which each student has his own desk. All of his work is done there, the instructors and apparatus coming to him. Thus any given problem, whatever its departmental ramifications, can be worked out on the spot. Owing to the flexibility of the facilities and equipment, simple and quickly made rearrangements permit shifting from chemical or physical experiments, for example, to anatomical, or to physiological, or to bacteriological.

This new laboratory is almost literally the students' "home." In it they spend virtually their entire time in intimate and continuous contact with teachers drawn from the several departments of medical science. The few months that have elapsed since the course started have shown dramatically how significant this kind of a "home laboratory" can be as a unifying force in the student's development. And in the instructor's development, too, for that matter.

The experience of teaching the new course has already had a striking impact on the instructors. This is giving us the optimism to believe that we have started on the road to training better teachers for medical schools. As deans we have no responsibility more compelling. Its challenge was superbly discussed by Dean Joseph C. Hinsey in his President's Address at the Sixty-First Annual Meeting of the Association, at Lake Placid in October, 1950. He emphasized, "What I consider to be one of our most important problems —the maintenance, recruitment and improvement of our teaching staffs in our medical colleges." [11]

We hope that from "integrated" teaching will come "integrated" teachers, individuals who can readily

cross departmental barriers to bring whatever is needed from this or that division of medical science to bear on the subject under study. Such teachers are needed urgently today. They would understand more fully than have many medical scientists in the past what each of the basic disciplines can contribute, in terms of well-defined information, to the armamentarium of the doctor. For the physician engaged in caring for patients, each contribution is significant in proportion to the working knowledge it gives him of man as a living organism, subject to environmental forces.

Training for teaching and research in any one of the medical sciences is a rational and rigorous procedure. Yet this does not justify the assumption that individuals who have passed through such training successfully have thereby necessarily become good teachers for medical students. A biochemist, who is only a biochemist and nothing more, is likely to forget that biochemistry is an important tool for understanding the human being. He is likely to teach biochemistry to medical students solely as an end in itself. He is unlikely to be more than a weak member of the teaching team of a medical school. Does this situation not contribute to the height of departmental walls? May it not explain, in part at least, why it has been so difficult to make of the medical curriculum a continuous educational experience for the student? Will the medical sciences be taught in an integrated fashion by teachers whose whole training and experience has engendered the separatist point of view?

Thus, the new course is designed to achieve for student and teacher alike the best possible understanding of the living organism. By virtue of an integrated exploration of life it seems capable of changing the intellectual climate of training in the medical sciences. The instructors, like the students, seem to be thinking more often now than before in terms of the interrelationships of the several sciences. They are re-educating themselves for the task of creating a new framework within which to teach graduate students and medical students more effectively. I think of the present step at Harvard as a strategic approach to the formidable problem of restructuring medical education.

Western Reserve

Now I go on to a comparable but much broader experiment at Western Reserve. Here the conviction in the advantages to be gained from integrated teaching has led the faculty to make a bold, frontal assault on the entire entrenched medical curriculum. Vigorous leadership has been given by the Dean, Joseph T. Wearn, supported by a Committee on Medical Education of the General Faculty functioning under the skillful chairmanship of T. Hale Ham, Professor of Medicine. Dr. Ham devotes all his time to this exacting task. Indeed, the innumerable, complex problems involved have kept many members of the faculty working day and night for months on end. We can all profit enormously from their valiant struggles. I say this with conviction and gratitude.

Dr. Wearn and his associates described their experimental program of medical education, including its background, evolution and operation for first-year medical students, at the Forty-Ninth Annual Congress on Medical Education and Licensure of the Council on Medical Education

and Hospitals of the American Medical Association. I need, therefore, simply to sketch the outlines as I know them.

To achieve an adequate orientation of the student to medicine, it is believed at Western Reserve, he must be introduced from the beginning, and simultaneously, to the basic principles and facts of man's structure, function, growth, behavior and relation to his surroundings. To help the student unify his experience and to realize that he is studying medicine whole, not piecemeal, virtually all the laboratory work in the basic sciences is performed in "home rooms" to which the various instructors come. The teaching, moreover, is not done by the several departments separately, but by interdepartmental groups. Regardless of departmental affiliation, each teacher teaches what he is best qualified to teach.

The new program of teaching in the first year, which may be characterized as an introduction to clinical medicine, calls into service internists, anthropologists, psychiatrists, social workers, to name a few, in addition to the usual basic scientists. It is hoped thus to teach medical students to approach people as people, not as specimens, to observe how they differ from one another, to learn something about the reasons why people (the students included) act as they do. Patients are presented to the students early in their course, and frequently thereafter, to provide actual experience in meeting and dealing with fellow human beings. The problems presented in the laboratory are studied in this light. The impact of illness is seen as it extends from the patient to his family and community. Concentration on symptomatic relief or practicing by rote is not likely to emerge after such a perceptive start!

THE experiments I have been describing are directed at the pattern of teaching and are largely concerned with the medical sciences. Now I turn to a group of experiments that emphasize learning through intimate contact between student and patient. They come to grips with the bivalent problem of teaching as effectively on ambulant patients as on bed patients, and of raising the quality of the care they receive to that now enjoyed by patients on the wards. Here teaching medicine and practicing medicine mesh intimately.

Before describing these experiments, I take pleasure in inviting your attention to the thoughful paper, "The Teaching of Preventive Medicine," by David P. Barr, which is published on page 49 of this issue of the Journal of MEDICAL EDUCATION. In this paper, which Dr. Barr read at our Sixty-Third Annual Meeting, many of the complex problems encountered in practicing and teaching comprehensive medicine in a great metropolitan medical center are carefully delineated. Dr. Barr sets forth his concepts of preventive medicine and its relationship to social service and to comprehensive medical care. He deals with prevailing deterrents which impede the implementation of these concepts, the difficulties in utilizing ambulant patients and the prerequisites for making effective use of the outpatient department. The earnest efforts being made under his leadership at the new Cornell University Medical College-New York Hospital "Clinic for Comprehensive Care" to gear service and teaching to the individual patient and to the medical student are breaking new ground. We can all profit by studying the Cornell program.

Colorado

A far-reaching effort along these lines at the University of Colorado School of Medicine turns on the need to demonstrate good general medicine. Training for general practice has been chosen as the target. The school has the advantage of having entered into partnership with a strong city-county health department, organized on a nonpartisan basis to discharge its duty to the public. The state university, trying to find a way in its particular geographical area to meet a special need for general practitioners, and the health department, charged with the responsibility for the care of the city's poor, have teamed up in a teaching and service plan that holds much promise.

The base of operations is the Denver General Hospital. Here an organization of students and teachers, designed to give family medical care in conjunction with nursing and social service, functions as needed in the patient's home, in the clinic or in the wards. The students are graduate students of medicine preparing for general practice, and juniors and seniors in the medical school, all working under the supervision of a balanced group of instructors. At the core of the plan is a general medical clinic replacing the outpatient department previously run along conventional lines.

The new general clinic has been set up like a series of doctors' offices. An individual who comes to the clinic for help is made the responsibility of a permanent member of the staff. He is examined and cared for by a medical student and a young physician. Specialists are called in only when their special skills are required, but the patient returns to the general clinic when the specialist has made his contribution. Housebound patients are visited at home. When a patient needs to be hospitalized, a member of the clinic's staff follows him into the wards, shares there in his care as far as is practicable and keeps in touch with him after discharge. A single record accompanies the patient wherever he goes.

In brief, the patient has access to a thorough examination, expert diagnosis and continuous medical care. Throughout, the preventive aspects of medicine are emphasized for the student in a framework where the teaching and practice of medicine meet on a common ground.[b]

Tennessee

At Tennessee, the experiment I wish to mention is searching for ways to shift the emphasis in medical teaching. It is designed to enable the student to meet more effectively the demands he is likely to encounter in practice. The instrument is the recently established "family general practice clinic," which has been set up as a part of the outpatient department of the John Gaston Hospital, a municipal institution in which most of the teaching is done.

In the rural counties of Tennessee about three out of five of the younger practitioners (graduates of the last 10 years), are University of Tennessee men. Two-thirds of the students coming from rural communities return to practice medicine to the kind of community from which they came. A large percentage of all Tennessee graduates, furthermore, enter gen-

b. An excellent summary of this Colorado program may be found in the "Annual Report" of the Commonwealth Fund for 1951. For fuller description of other experiments discussed in the present address, I refer the reader to the Fund's "Annual Report" for 1950, 1951 and 1952.

eral practice. Until recently, however, both bed patients and ambulant patients have been dealt with in terms of specialty care, and the medical students have been taught largely by specialists. Now the general practitioner is being given a greater responsibility in the teaching program.

General practitioners from Memphis staff the "family general practice clinic" and work under a policy that uses their talents to the limit before a specialist is called. The fact that these practitioners work not only with eager students but with members of a medical faculty made up principally of specialists, stimulates them to their highest standard of performance. The students, who will for the most part become general practitioners, are thus being taught in this clinic by general practitioners who know at first hand the problems of their communities. They give instruction designed to meet the special requirements of practice. At a practical level, the students are taught laboratory procedures of a kind that they can carry out later on in their own offices, they are taught to work with simply trained technicians, to do their own fluoroscopy, take their own x-ray films, etc. A new and distinctive element in this teaching environment is a social worker who, by arrangement with a recently organized branch of the Nashville School of Social Work incorporated into the University, devotes full time to teaching in and about the clinic.

The Tennessee experiment recognizes the fact that a medical school must be alert to the special problems of its locality, to the special roles it should play in the theater of medicine. It seems to me that many of the features of the Tennessee program will be instructive for other schools, but its real significance is that it attempts to meet, in a practical way, the regional demand for improved general medical practice.

Boston

My neighbors at Boston University have revitalized an old teaching device. Seventy-five years ago students began going out under the direction of physicians from the Medical School and the Homeopathic Medical Dispensary and Hospital, ancestors of the present Massachusetts Memorial Hospitals, to visit patients in their homes. This program to provide medical service to the needy sick in the south end of Boston has continued in operation ever since. When the hospital ward became the center of medical instruction, however, the program lost most of its interest for the faculty, although it apparently retained its popularity with the students. Then, in 1948, a new department of preventive medicine was organized under the chairmanship of Henry J. Bakst. He was given the responsibility for the home care program. It has flourished extraordinarily under his skillful guidance and has grown into an enormously successful teaching device. Once again it is highly regarded by the faculty. It is greatly liked by the students. In short, it has become in a few short years the pivotal point in undergraduate medical teaching during the clinical years.

Senior students, devoting all their time for a month to this service, help to provide medical care in the patient's home. Screened cases are assigned to them. After a conference at which the patients of the previous day are discussed, the students visit their new patients and revisit old ones if necessary. Then they return

to the school for a conference with residents, after which these residents return with the students to the homes of the day's new patients to check their findings and to make recommendations. Once a week all the students meet in a group with a member of the Department of Psychiatry for a discussion of psychosomatic problems. At another conference each week the group meets a social worker to explore environmental difficulties and community resources available for dealing with them. The actual experience of the student, not a hypothetical situation, is the basis for his teaching.

For senior students thus to be thrown on their own responsibility in a patient's home is something quite different from meeting a patient in the clinic or hospital ward under the watchful eyes of their instructors. The patient has no label. The student must gather his own facts and bring them to bear on the problem before him. In this way he learns to trust himself. He can hardly fail to see the setting in which the patient lives and to appreciate its impact on the illness. A quickened awareness of the social aspects of medicine is almost inevitable.

To pave the way for this experience in the fourth year, the school assigns a family to each member of the third-year class. This also creates an opportunity for the continuous observation of a family for a two-year period. Whenever possible, families including young children and an individual with a chronic disorder are chosen. While students are not intended in this relationship to a family to carry the final responsibility for diagnosis or treatment, they often establish such warm relationships that the family insists on consulting them before accepting the advice of the supervising physician.

The student spends 75 hours in his third year and 200 hours in his fourth year in this program. For this small expenditure of time, less than 10 per cent of the hours devoted to medical study, the student gains a deep understanding of the social and environmental factors in disease and the impact of illness on the individual and his family. He gains this understanding in a way that books, lectures and demonstrations can never make possible; he actually functions in the real setting in which he will later practice as a full-fledged doctor.

Dean James M. Faulkner has written that this program offers ". . . a favorable opportunity to bring into focus one of the primary objectives of medical education, a consideration of the whole patient in his natural milieu. From the point of view of the student," he adds, "it shows him that his previous training in the various medical and surgical specialties is partial and incomplete. Even if all the information acquired in the individual courses is synthesized, it is still inadequate if it does not take into account the environment and the patient's reaction to it." [c]

Pennsylvania

Four years ago what was then a unique project in medical teaching was initiated by Dean John McK. Mitchell at Pennsylvania. First-year

c. Dr. Faulkner is editing "A Symposium on Extra-Mural Facilities in Medical Education," which will be published this year by the Journal of Medical Education. It promises to be a valuable synthesis of current thinking in an important area. A dozen or more distinguished teachers are contributing papers on such topics as general practice and comprehensive medical care, problems of prolonged illness, the integration of psychiatry and medicine, the family unit and the community, disease prevention and health service, the health team, etc. All of these will be focused on student participation and problems of student supervision.

students were offered an opportunity to participate in a new program, called "The Family Advisor Group," which Dr. Mitchell and his colleagues designed to provide for each volunteer a chance to associate closely with a carefully selected family. The student is introduced to the family as a "doctor in training" and he must make it clear from the outset that he is not in a position to discharge medical responsibility.

The families, after hearing the plan explained to them by a social worker, are asked if they would like to have a "family health advisor." Only one of the original 40 families so approached chose not to participate. Whenever the family had a physician of its own, his approval was of course obtained and his cooperation in the teaching program was sought. Physicians have been much interested in the students and have often held conferences with them.

Thus at Pennsylvania medical students are serving as links between families and the University Hospital and its clinics, opening the door there ". . . to assume gradually increasing responsibility for the medical and related problems of family . . . throughout the four years in medical school." [12]

As I have observed the program, I think of it as a "laboratory" for the department of preventive medicine. In his first year the student, without being especially conscious of the fact, starts a practical course in human relations. This experience has vital significance for his learning process because he is an active agent, not just an observer. In addition to the competence he acquires in learning to meet and to judge people, in learning to appraise their strengths, their weaknesses and their reactions to life situations, he is also brought closer to the realities of medical practice in the home and community. He acquires thereby a practical familiarity with the procedures and routines that he will be using for the rest of his life.

Adequate supervision by internists and social workers has been made readily available. They are on call for consultation with students day and night and have been consulted freely. In general the students have visited their families about once a month. During an acute illness or when special problems have arisen visits have been made more frequently. At times the families have requested extra visits. Once a month students meet in small groups for discussion of their families' problems; once a month larger groups gather for broader consideration. Most students devote about six hours a month to this course during the first or second years—in a few cases considerably more time.

Whenever a member of a student's family enters a hospital or clinic, the student is notified in order that he can be present when the intern, resident or staff physician sees his "charge." Thus the student learns at first hand how medical and surgical situations are dealt with. He is often consulted by these physicians about the home situation and is able to provide valuable information.

The student thrives on responsibility, not the responsibility for clinical decisions which he is not in a position to make, but on the responsibility for establishing and developing a constructive relationship with people. This is a large part of the doctor's job. Herein resides one of the great assets of the program If successful progression from medical student to doctor is largely de-

pendent on the maturing process, then surely we must provide for our medical students the kind of environment in which they can mature most effectively. We cannot force them to "grow up"—they must do so on their own. They will do it more completely by learning to understand themselves. This comes both from, and contributes to, understanding other people. Thus the opportunity for medical students to mature for four years through association with others —not just doctors or teachers but also the kind of people they are likely to meet as patients—is proving to be significant.

For those who consider me too enthusiastic, I suggest a careful reading of the letters from students who have participated in this new program and of the statements of appraisal by the experienced teachers who are conducting this experiment.[12]

THESE SIX experiments, I submit, are provocative. So are others that I have not had time to mention. They all strike hard at unsolved problems. All of them attempt in some way to draw the teaching and practice of medicine into a structural whole. In their execution, errors are certain to be made and disappointments will be many. Practical exigencies may dictate modifications or even major realignments. It seems to me reasonable, nevertheless, to expect that a valuable residue will remain after the ultra-centrifugation of experience. We hope it will provide the material out of which to construct for tomorrow a sounder program of medical education.

How? Through the Teaching Institutes.

These Institutes can make our individual experiences rapidly and widely usable. They can mean much more than mere exchanges of ideas among deans and department heads. They can be practical instruments for restructuring medical education. Let me describe the evolution of thinking that led to the Committee's plans for these Teaching Institutes in order to show you why I consider them so important for the future of medical education.

III.—THE TEACHING INSTITUTES

THE STANDARD medical school curriculum has grown and grown by the addition of factual material. It is always easier to add than to reorganize. Thus the curriculum has become unwieldy, so much so that it is in danger of defeating its very objectives. The dinosaur grew and grew and, having passed the point of stability, collapsed of its own weight. Many teachers feel that the continuous squeezing of more and more facts into the curriculum is leading to the same fate.

As more and more knowledge accumulates and is compressed into the four undergraduate years, the pressure is becoming intolerable. Relief through extending the period in medical school to five, even to six, years has been suggested as a way to accommodate the mounting mass of material felt to be essential for the student. The constant addition of the rapidly growing mass of scientific knowledge is simply engulfing his educational opportunity. One does not often solve a problem by postponing it, and surely the day would come when six years would not be enough. My own feeling is that medical education is already too long. Through college to the specialty boards is a 12-to-15-year run. Certainly we cannot meet the problem

wisely by demanding that our students devote more and more time to preparation for their professional work.

As medical education has become more complex, it has splintered. Now each splinter is rapidly accumulating its own body of knowledge, forcing the specialties further and further apart. However desirable this process may be for certain purposes, it is essential that we regard with a critical eye the mounting tendency to impose specialization on the teaching of the medical student. I think it is tragic that he is being confronted more and more by trees; has a chance to see the forest less and less clearly.

Yet this is not the worst of it. Our preoccupation with scientific medicine has tended to let the patient fade into a faceless, nebulous creature, often no more than a number on a test tube or an entry on a chart. Such an attitude is not consistent with the best medicine. Moreover, it is not "scientific." While the student is learning a great deal about the patient's 17-ketosteroids, undeniably important, he tends to overlook the patient's anxieties and hatreds, his attitudes in his family setting and the pressures that hem him in. These, too, are important. They must receive greater attention. In brief, scientific medicine is a misnomer, I think, when it is exclusively preoccupied with the physical and chemical constitution.

To meet this predicament through the successful reorganization of medical teaching, we must do more than add to, or subtract from, or simply rearrange the curriculum. Reorganization means a fundamental structural change and a realistic examination of the departmentalized teaching now found in most schools. It is obvious that the present traditional system of departmentalization has achieved administrative convenience. More important, it permits a department "to get its teaching over with," leaving free and uninterrupted time for research by the staff. This has great advantages. Something has been lost, on the other hand, from the student's educational opportunity. A new balance is needed. Is it possible that such subjects as physiology, biochemistry and pharmacology, by having so much in common, can be adroitly combined in a way to permit teaching more efficiently the essential principles they contribute to a medical education? I think so. Such a step, furthermore, would not minimize the individual contributions of the biochemist, the pharmacologist or the physiologist. On the contrary, the step would enhance the capacity of each to function more effectively because of closer collaboration with workers in allied fields.

Some teachers are uneasy at suggested revisions in medical education because *scientific* medicine seems to them to be threatened by *comprehensive* medicine. This is a topic for animated discussion at faculty gatherings. Scientific medicine is medicine based on the fullest and most exact knowledge of man available. When the term "scientific medicine" became popular, knowledge was drawn largely from physiology, which in turn was indebted to chemistry and physics. Scientific medicine was thus primarily physiological. Physiological concepts provided a remarkable insight into the nature of disease upon which to base clinical judgments.

No one can seriously challenge the value of the contributions that natural science has made to clinical

medicine. It is also important to appreciate that significant new avenues to understanding man are being opened up rapidly by psychology, anthropology and other of the social sciences. To say this does not imply that any of the old ways of characterizing man are losing their value—quite the opposite! It means, rather, that students should have a better chance to view the patient in broader perspective, taking into account the entire family and community setting. Man shall not live by bread alone—the orthodox basic medical sciences, though more and more important, are less and less the *whole* story.

Psychiatric Teaching

With these considerations on its collective mind, our Association started searching for the best way to use the conference technique as a means for bringing the joint thinking of its members to bear on resolving our present difficulties. Expanding areas of medicine that are impinging on its entire structure were chosen for early exploration in order to provide the broadest possible view of the problem. We were happy to learn that many thoughtful teachers of psychiatry had been struggling with similar questions in their own field. Thus it was the Association's good fortune to be able to join with the American Psychiatric Association in organizing and conducting the First and Second Conference on Psychiatry and Medical Education. These conferences, which were held at Ithaca in 1951 and 1952, have proved their value, not only because of the specific and practical suggestions that grew out of them, but because the great effort spent on their design showed us how to plan our future conferences more successfully. I predict that the report of the first Conference, "Psychiatry and Medical Education," [13] published in 1952, will exert a salutary influence on medical education for years to come.

Preventive Medicine

The Ithaca Conferences confirmed the wisdom of having started broadly. It was hoped, therefore, to continue to explore another area that embraced all phases of our problem. Again it was the Association's good fortune that teachers in another such field, preventive medicine, had been asking themselves searching questions about their role in medical education and had discovered that the answers were elusive. Because of this, they welcomed an opportunity to sponsor a joint conference. Those of us who have just had the privilege of participating in the five-day Conference on the Teaching of Preventive Medicine, under the skillful co-chairmanship of Doctors Florio and Darley, can appreciate how significant this undertaking has been. Better than any words of mine to convince you of its significance is the preliminary report of the Conference appearing on page 43 of this issue of the Journal of MEDICAL EDUCATION. The full report will be published by the Association as a supplement to the September number. This Conference went much further than any earlier attempt toward defining the concept of comprehensive medicine, thereby giving a new insight into the forces at work in medical education. I think that time will vindicate my judgment.

THE EXPERIENCE gained in these three conferences has equipped the Association to launch a series of Teaching Institutes designed to ex-

plore the entire structure of medical education. It is equipped to do so with great confidence, in my opinion. Its resources in terms of the data available for exploitation are impressive. The reports of the extensive surveys of medical education and of preprofessional education, sponsored by the Association and the Council on Medical Education and Hospitals of the American Medical Association, will soon be available.[d] Current experiments in medical teaching are providing further data, as well as the actual experience of the teachers and students who have participated in these experiments. The Association's Director of Studies, John M. Stalnaker, has been assembling complete and accurate records of medical students and applicants to medical schools. His skillful analyses of his extensive data are providing many important answers to problems confronting both the undergraduate colleges and professional schools. Dean F. Smiley, our tireless Secretary, has assembled a wealth of valuable material during his many visits to the nation's medical schools. Most important of all, the time is ripe. Dissatisfaction with the *status quo* in medical education is growing.

This dissatisfaction can be seized on by the Association as an opportunity unequalled since the days of the Flexner Report to draw meaningful conclusions from these data as we join forces to search for solutions to our many problems. Since the Teaching Institutes offer such a promising device, they should become a major endeavor of the Association. Much as deans must concern themselves today with the mechanics of running their schools, their chief efforts should be directed toward the constant improvement of medical education. The Institutes will lead them to the heart of the matter, permitting them to implement the central objective of the Association, which is, as stated in Article II of the Constitution, ". . . the advancement of medical education."

The Committee has planned that these Institutes shall be held each year in conjunction with the Annual Meeting of the Association. They can accomplish for us nationally what the best kind of faculty meeting accomplishes at home. They can provide an extraordinary opportunity for all of us to share realistically in the experiments in medical education that are being pursued at great cost and effort in a few schools. To the extent that each of us contributes his own time and thinking, these Institutes can be made significant. It will tax our energies to the limit.

WE HAVE a great deal to learn if we are to improve the opportunity that we give to a medical student to pursue his professional education. The assignment is truly formidable. To simplify the task as much as possible the Committee has decided to focus the Institutes on concrete and circumscribable areas as the best way to keep the discussions from deteriorating into broad generalizations. Six annual Teaching Institutes have been laid out tentatively in the following alignment:

1. *Physiology, Biochemistry and Pharmacology.*
2. *Pathology, Microbiology, Immunology and Genetics.*
3. *Anatomy, Histology, Embryology and Anthropology.*
4. *Medical Ecology.*
5. *Clinical Teaching Including the Internship.*

d. The reports of these two surveys will be printed in companion volumes by the McGraw-Hill Book Company, Inc., of New York City.

6. Specialty Training and the Continuing Education of the Physician.

The success of the Teaching Institutes will depend, in large measure, on two factors: the extent and effectiveness of pre-conference preparation—the hard spadework of the planning committees—and the extent and intensity with which the deans and teachers participate in the Institutes themselves. The worst danger we face is succumbing to the comfortable belief that a conference, *per se*, is a guarantee that problems will be solved. Were this true, many of the world's perplexities would have vanished long ago.

We have learned by actual experience that an enormous amount of skillful planning must go into one of these conferences. This requires months and months of meeting, thinking and discussing by the preparatory committees. Documented agenda must be carefully worked up. The major questions must be framed and assigned to small but diversified groups for analysis. These groups must be ready to present to the Institute specific, concrete suggestions for the purpose of generating discussion and for critical evaluation. Then, during the Institute itself, these suggestions must be worked over—thrashed out—by all the persons participating in order that they can be carefully weighed on their merits. Out of such modifying and refining of the proposed formulations can come solutions of such high practical value that they will minimize the inertia now blocking the envisioned restructuring of medical education.

No one will draw the inference from the last statement, I sincerely hope, that a single theoretical blueprint complete to the last detail is envisioned. We are certainly wise enough to know that many good roads lead to Rome. There is no single solution to the problem of restructuring medical education. Indeed, no single pattern would fit any two schools. Regimentation with all its attendant evils would destroy one of the greatest strengths of medical education in America—its diversity. Rather, it is the belief of the Committee that the Teaching Institutes can mobilize a wide variety of carefully thought out general and specific suggestions which each school can seize upon to use as best serves its particular ends. And each school should give serious thought to what these ends are—to what it is really trying to do in the field of medical education.

1. Physiology, Biochemistry and Pharmacology—The first Teaching Institute will be held next fall at Atlantic City, N. J., immediately preceding the Sixty-Fourth Annual Meeting of the Association on October 26-28. It will function under the co-chairmanship of Julius H. Comroe, Jr., Professor of Physiology and Pharmacology in the Graduate School of Medicine, and of John McK. Mitchell, Dean of the School of Medicine, both of the University of Pennsylvania.

Preparatory committees have been working assiduously for months setting up the targets at which this first Institute will shoot in seeking the most effective ways whereby the triad of physiology, biochemistry and pharmacology can contribute to the education of a physician. This is the basic problem for the first Institute. Such being the case, it will be advantageous to examine it in as many ways as possible in order to bring every facet into view. Let me put it another way, therefore: what concepts, values and areas of interest

from this triad of medical sciences should be the common property of all physicians? This question, extended to embrace the other medical sciences and, in fact, all other areas of medical teaching, will concern each of the succeeding Institutes.

Additional questions that must be faced at the first Institute are these. What knowledge and skills from the triad should a competent physician be equipped to apply? How can these be taught best? Is it possible that the three disciplines have so much in common that they can be presented in a more closely coordinated manner? Since the disciplines share so many facts, can teaching these facts to the student be done more practically as a joint effort than as three separate efforts?

Early in the deliberations of the preparatory committees for the first Institute, it became apparent that some division of the complex problem was necessary to facilitate tackling it. It was decided to build the conference around four areas, designated for convenience: *content, student, teacher, school.* This is proving to be a helpful way of looking at the problem, but the areas must not be thought of as setting off clear-cut divisions. There is no reason why they should. After all, under examination are the delicate and dynamic relationships between one discipline and another and their impact on the student and teacher in the school environment. One cannot slice like a melon a complex problem of this nature any more than one can segregate the endocrine, cardiovascular and central nervous systems in a successful endeavor to build a total picture of the living organism. As ideas ebb and flow among these overlapping divisions of the problem into *content, student, teacher* and *school,* we expect to achieve a better synthesis of the triad in the teaching of medicine.

What do we mean by "better synthesis?" We can define it as the creation of a more favorable environment in which a medical student can acquire optimally from the triad the intellectual orientation as well as the practical tools he must have to be a helpful physician in modern society. Although many of us believe that the greatest medical educational system the world has ever known is ours today, we realize that it is not the best possible system. In endeavoring to improve it, let us not forget how subtle and intricate are the balances involved. The cure must not be worse than the disease! These balances raise questions affecting the whole sweep of the student's education, long antedating his entry into medical school and extending for many years past his graduation with the M.D. degree.

How is the triad's content related to the collegiate phase of the medical student's preparation and to his future education? How do these relationships influence the subject matter taught? By the separate departments? Jointly? What can this triad contribute *uniquely* to medical education?

To stimulate our students to appreciate as their job the solving of problems rather than the memorizing of facts is the essence of our tasks as teachers. How can we help them see this? To what extent does the vast amount of material presented to the student and the method in which it is presented engender a compulsiveness that leads him to rush back to his room in the evening to memorize lecture notes or a chapter from a textbook rather than to work out in detail and mull over the implications of his day's experiences in the

laboratory? How much of this compulsiveness results from immaturity or from weaknesses in educational opportunities enjoyed prior to entering medical school? Many teachers feel that there is a great waste during the years of early schooling. What does such a viewpoint, assuming it to be correct, mean to medical teachers? What can they do to rectify this waste?

Medical schools must accept the responsibility of developing their future teachers. How can they be equipped to understand and to deal constructively with questions such as those just posed? Are we deans guilty of implementing a kind of administrative schizophrenia in our selection of teachers, which prompts us to choose a teacher on one basis (to teach students) but to appraise him on another basis (research ability)? Surely a proper balance must prevail here. What should our yardsticks be for measuring teachers? We ought to protect students from teachers who ride their hobbies at the students' expense, or who seduce them with the "cold dope." But seduction is easy when a student is snowed under by overwhelming masses of fact. An overcrowded curriculum can deaden curiosity and dull the edge of original thought. One can hardly expect a student to be creative when the environment provides few opportunities for its expression.

How else should we judge teachers? By their ability to articulate fluently in the lecture hall? To some extent, yes. While we are not seeking public speakers, the ability to communicate is a great asset.

What we really want is teachers who manifest a spirit of experimentation in their teaching and who are as much concerned with the process of achieving ends as with the ends themselves. In other words, we want teachers who are concerned with the modes of the student's thinking more than with the facts that he is memorizing. Such teachers make of teaching something that is rich in intellectual challenges—the kind of challenges that lead to the formulation of problems and to the planned search for evidence, that lead to the testing of tentative conclusions to establish their tentative validity.

In striving for good medical education, we must remember that it is good when it is good education. This means we need more good teachers.

In discussing the first Teaching Institute, I have tried to picture the kinds of problems to which we shall be addressing ourselves next fall, have tried to anticipate some of the experiences that we shall be sharing. My objective has been a dynamic account of the conference rather than a detailed morphological exposition. It is clear, I think, that many of the questions we shall ask ourselves—and try to answer—have not been mentioned, but enough have been mentioned to show that these questions will require repeated exploration at future Institutes when the focus of interest is shifted from one area of medical education to another. Although the focus of interest shifts, many of the fundamental questions will be the same. This should help us to relate our preoccupation with issues of the moment to the dominant theme of the Institutes—the concept of medical education as a coherent whole.

I should like now to sketch briefly some of the key issues for exploration at succeeding Institutes in an effort to capture for you, if I can, something of the full sweep of the six-year program envisioned by the Committee.

2. Pathology, Microbiology, Immunology and Genetics—The pathologist, bacteriologist or immunologist in a medical school today is torn between conflicting demands: his role as scientist and his role as practitioner. The incessant calls for his services as a medical specialist are so overwhelming that the pursuit of scientific interests is well nigh impossible. How can one best serve utility, without impeding fundamental advances in these areas? This is a burning question in medicine today.

If one asks this same question from the student's point of view, it becomes: what is the desirable balance between general pathology and special pathology? Perhaps one can find this balance by keeping constantly in mind the concept of general pathology as putting organisms under stress in order to reveal some facet of the living mechanism. In this sense, general pathology is co-extensive with experimental medicine. To teach pathology in this light is to help the student to weave into a meaningful tapestry the many threads of fact and theory that he encounters in medical school.

In the dynamics of the host-parasite relationship, the department of bacteriology also has a superb opportunity to bring the student into contact with many areas of medicine. I know this as the result of many years of teaching. General pathology embraces the host-parasite relationship, for the host and parasite are continuously putting each other under stress. Many disciplines, including pathology and bacteriology, fuse in this fundamental biological concept.

The geneticist, too, has much to contribute to an understanding of the host-parasite relationship. What better avenue exists for him to approach the medical student? Indeed, pathology, microbiology and immunology provide a happy hunting ground for the all too often neglected geneticist. And if these medical scientists plus the geneticist were to combine forces with the clinician in organizing their teaching material, the curriculum would acquire greater continuity.

3. Anatomy, Histology, Embryology and Anthropology—The Committee placed the Institute on the anatomical group third in the series to help us to escape from our habitual thinking that the study of medicine should necessarily begin with anatomy. In scheduling this Institute third it was thought that a fresh outlook might enable us to highlight the dynamic aspects of a group of medical disciplines too often regarded as being static. Against our background of all the medical sciences, it may be possible for us at the third Institute to discover better ways to teach medical students more dynamically about cells as living entities. Their concept now is too often that of lifeless structures. The histochemist is helping us to revise that concept.

The Institute will need to consider other important problems too. Can the methods of teaching anatomy and the material taught be restructured in a way to emphasize more effectively growth and development, to give a better insight into adolescence and aging? What contributions in this direction stem from the usual courses in embryology? How can we improve the teaching of this subject? Uncertainties about where, and how, and when embryology should be taught is a source of worry for both teachers in college and medical school as well as for students.

What are the practical considerations linking the teaching of anatomy

and surgery? How much detailed anatomical knowledge is it essential for the physician to have? How and when should a future surgeon gain the additional knowledge called for by his special interests? What training in anatomy and histology should precede the study of gross and microscopic pathology? To what degree can the teaching of these subjects be profitably combined?

An essential function of this Institute will be that of recapitulating our three-year analysis of the basic medical sciences. In doing so, we will be greatly helped, in my opinion, if we remember that all of them come to a focus on the cell, the fundamental unit of life. Their intimate interrelationships constitute a significant point of departure for our exploration of medical teaching.

4. Medical Ecology—In the first three Institutes we shall have been striving for the best possible characterization of the human being in terms of "the basic medical sciences." All of us appreciate how elegant is this characterization. We appreciate that these sciences have made modern medicine the magnificent edifice that it is. We are coming to appreciate, too, that a broader characterization of the human being—a broader concept of human nature—is needed as basic in the professional training of the physicians of tomorrow. The Institute on Medical Ecology will be concerned with human biology as it deals with mutual relations between men and their environment.

At this Institute we shall be in a position to capitalize on three conferences concerned with the teaching of psychiatry and preventive medicine, themselves ecological in their orientation, and on three Institutes covering the basic medical sciences. In the light of this experience, looking both backward and forward, we shall be endeavoring to blend the concepts of medical ecology into the teaching of the doctor. Let me attempt to summarize this in another way. We shall be trying to make more useful in the training of a physician the accumulating body of knowledge and theory about the impact of one personality upon another.[e]

5. Clinical Teaching Including the Internship—Clinical teaching should not be dealt with as a course to be suddenly thrust into the medical curriculum, but as an evolutionary process—a development emerging naturally in a continuous educational experience. Some of the questions provoked by this viewpoint include the following: How early in the student's medical school career should he begin to meet patients? Under what circumstances? In clinics? In the wards? In the home? How can clinical teaching relate best to basic science teaching? How may one achieve the aim of good clinical teaching: a deep understanding of the basic alterations in disease states? This should precede the therapeutic attack on disease patterns. How can the student be led to accept responsibility commensurate with his increasing capacity? How can one balance optimally the educational opportunities of the internship against the demands of the hospital on the intern for service? These questions must all be explored at this Institute with the student's maturation as the cardinal objective.

6. Specialty Training and the Continuing Education of the Physician—Medical schools have a great but as

e. Norman Cameron in Chapter 5, "Human Ecology and Personality in the Training of Physicians," of the Report of the 1951 Conference on Psychiatric Education,[13] has provided a lucid account, both penetrating and comprehensive, of what this means.

yet largely unrealized opportunity as well as obligation, in my opinion, to contribute more effectively to post-graduate educational programs. An important part of the professional growth of a hospital resident is his gradual transition to the role of teacher when he has an opportunity to deal with medical students. Schools, hospitals and specialty boards must find better ways to collaborate if the gains accruing from specialty training are to be conserved while simultaneously being protected from well recognized threats inherent in many existing programs.

Helping practitioners to maintain and to expand their professional competence under the great stress of practice is an urgent yet entirely unsolved problem in American medicine. Medical schools must take the active lead in finding practical answers. To succeed, they will need all the cooperation that they can get from hospitals and professional societies. Let us not underestimate the difficulties. No problem facing any of the Institutes will exceed its challenge to our ingenuity.

IN CLOSING this discussion of the Institutes I should like to draw on the wisdom of a number of people who have said things that I think are instructive.

Four years ago, John M. Russell, Executive Director of the John and Mary R. Markle Foundation, observed:

"It has often been said that universities, and the professional schools that form them, are the best judges of their own educational activities . . . you—the medical deans—are the best judges of your own activities. With this, I fully agree. . . . It is because of this conviction that I ask, 'What do YOU propose to do about medical education?'

"To retain independence is not easy. To be independent requires vision—and ability to see ahead and to plan for the needs of the future; it requires the same intense interest and belief in the value of experimentation and development in medical education that you show in your scientific laboratories; and it requires a full understanding of what medical education is and its place in training doctors for the future of this country—not for the past.

"So . . . I am suggesting: first, that the medical deans assume the leadership in medical education and hence in the profession; and, second, that you work out your problems as educators together through the services of this Association. If you don't assume full control of medical education, others will."[14]

A pungent observation comes from the "Report of the Study for the Ford Foundation on Policy and Program:"

"A number of the committee's advisers . . . point out that in many instances individual school systems and individual schools and colleges, for lack of any other guide, base their educational programs simply on tradition. Many schools have moved with glacial slowness in the introduction of new or improved subject matter or methods of teaching . . ."[15]

In commenting on the process of splintering, one of our most grave problems, in the educational system, the Ford Report states:

"While specialization is to be encouraged as a proven technique for the acquisition of knowledge and for its application in our complex society, we must strive to educate as many persons as possible to understand how specialized knowledges fit together for the constructive interests of society as a whole . . . in medicine, our doctors tend to receive insufficient understanding of their relation to society as a whole."[16]

I think that the authors of these statements pose some of the really profound questions before us as we prepare to launch the six-year Teaching Institute project. It will be well

for us to be reminded of these statements throughout our discussions—Mr. Russell's shrewd observation that if we fail to do the job ourselves, someone else will do it for us; the Ford Report, suggesting that not only medical education but something bigger in our society is at stake in the educational challenge before us.

The Parts and the Whole

"Education is the acquisition of the art of utilization of knowledge," A. N. Whitehead wrote in 1929 in "The Aims of Education." This observation might well serve as a lodestar for all medical students, indeed for all medical teachers. The philosopher is telling us that education is more than the acquisition of fact; it is the acquiring of the art of utilization of knowledge. Note that the utilization of knowledge is an art, not an exact science. It is an art the student acquires through the inspiration of his educational experience. It is, in a way of speaking, a realization of thoughtful men when they discern that, although the sum of the parts is important, something is more important still—the whole. Such a concept—that the whole can be greater than the sum of its parts—is called *entelechy*. To my way of thinking, it holds great meaning for us as medical teachers.

From many quarters we are hearing the criticism that humanitarianism and consecration, the devotion of the doctor to his patient, are less dominant notes in medicine today than they were in the time of our grandfathers. Whether or not this charge is true, all I ever hear and read are opinions on the subject. I know of no real evidence attesting to either the truth or falsity of the indictment.

It is frequently suggested, nevertheless, that medical schools, in addition to teaching medicine, should also *teach* virtue. But virtue, I think, is not taught; it is *exemplified*. A recent article in *The Atlantic* expressed this rather nicely: "The citizen of the world is more likely to emerge from a proper study of history than he is from a course in international understanding, and the man of civic virtue from living in the ethos of a good community than from a course in citizenship."[17]

Humanitarianism stems from the subtle interplay of many forces, foremost among them the maturing process whereby an individual gains increasing insight into himself and into others with whom he associates, and acquires a keener awareness of the swirling currents of human aggression in the environment. The experience that enables one to understand this sort of thing comes not from textbooks or lectures, it arises from the kind of experience that brings home to a sensitive individual both the tragedy of illness and the inner security that comes from tackling a task with integrity and competence. After all, does this not lie at the core of the study of human ecology?

The Challenge

The whole system of medical education urgently needs restructuring. This is my conviction; it is shared by many of my colleagues. In stating it, I am not advocating change for the sake of change any more than was Heraclitus when he taught 25 centuries ago that nothing is permanent except change. The evidence I have presented convinces me; I hope that it convinces you. I like to think of our wealth of data, derived from the conferences, experiments, surveys, visits

to the medical schools, etc., as the raw material that we can process into a valuable product. I hope you will agree that the Teaching Institutes can be the effective device to mint into useful coinage this wealth of bullion.

As doctors and teachers we cannot reform the world, although we often wish that we could. We shall be fortunate, indeed, if we can succeed—even a little—in reforming ourselves, which is the first step in restructuring medical education. But we can try. It is the challenge before us at mid-century. Marcus Aurelius must have had a similar issue in mind, I think, when he wrote: "Time is a sort of river of passing events, and strong is its current; no sooner is a thing brought into sight than it is swept by and another takes its place, and this too will be swept away."

I bespeak the active cooperation of every member of the Association with the committees now hard at work on the Teaching Institutes to the end that—as things move, and we are part of the movement—we can strive to be constructive. Though we are but part of a passing scene, let us do what we can to leave our mark on that scene in terms of improving medical education.

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Conference on Preventive Medicine in Medical Schools

The preliminary report of the Conference on the Teaching of Preventive Medicine reviews conference preparation, explains its conduct and indicates some of its conclusions.

JOHN P. HUBBARD and KATHARINE G. CLARK

A FIVE-DAY Conference on the Teaching of Preventive Medicine was held immediately preceding the 63rd Annual Meeting of the Association of American Medical Colleges. The membership of the conference included teachers and professors of preventive medicine and public health from 73 medical schools in the United States and Canada, deans, professors of other subjects from various medical schools, representatives from foundations and others with national and international interests in the field of health.

The timing of the two meetings was planned to secure mutual stimulation of ideas between faculty and administration concerning the role of preventive medicine in undergraduate medical education. Accordingly, 26 deans attended the preventive medicine conference as active participants. In turn, representatives of the conference stayed through the AAMC meeting to take part in a series of roundtable discussions and to hear a morning's general session of reports focused on the central topics explored by the conference. To a considerable extent, therefore, the opinions reflected the thinking of deans as well as those directly concerned with the teaching of preventive medicine.

A report is in preparation which will review these opinions as the expression of the concentrated double meeting. It is the result of more than a year of preconference thinking, meeting and discussing in preparatory committees. The following is not intended to summarize the conference but only to indicate its origin and conduct, and certain of the main channels of its thought.

Origin and Conduct

For approximately 10 years teachers of preventive medicine have been meeting informally each year to interchange ideas and experiences. In 1946 need was felt for a more formal

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meeting, and one was held in Ann Arbor, Mich. At that time the field was explored, possible improvements were outlined, and a suggestion was made that there should be another meeting a few years later to assess the gains and lay the course for further progress. Consequently, in 1950 at the time of the annual meeting with the American Public Health Association, plans were made for a five-day conference.

When, early in the course of events, a generous grant was made by the Rockefeller Foundation, the proposed conference became a reality. Additional support came from many sources: the Commonwealth Fund, the Albert and Mary Lasker Foundation, the John and Mary R. Markle Foundation, the Metropolitan Life Insurance Company, the National Foundation for Infantile Paralysis and the National Tuberculosis Association; the Public Health Service contributed the services of an executive secretary and stenographer.

A small planning committee was organized and met on several occasions, first in the summer of 1951. It defined the major topics which the conference might most profitably explore. These concerned the role of a department of preventive medicine in: (1) curriculum content and methodology, (2) interdepartmental relationships, (3) comprehensive medical care, (4) community health activities and (5) research. As groundwork for the conference, the planning committee appointed five preparatory committees. Each was assigned one of these topics for particular study and instructed to prepare a "documented agenda" for conference discussion. During the intervening year these committees produced a wealth of carefully organized background material, which was sent to everyone who was going to participate in the conference several weeks before it began.

Conspicuous in the early plans was the decision to ask the AAMC to act as co-sponsor, and to schedule the conference in conjunction with the Association's annual meeting in 1952. A fruitful working relationship was thereby established and increased greatly in importance as the plans matured.

The conference itself convened on November 3, 1952. For the first three days it was divided into five working committees, each to consider one of the five topics listed above. Since the total membership had been strictly limited to 150, these five groups were small yet varied enough in membership to stimulate free and diverse discussion. On the fourth day each committee chairman and his recorder reported the ideas of his own group before the conference as a whole, and invited general comment and debate. A final session, on the fifth day, drew together the various strands of thinking from the separate committees as three speakers addressed themselves to the following questions, proposed by Ward Darley, co-chairman of the conference.

—What concepts, values and areas of interest from the field of preventive medicine should be common to all physicians?

—What knowledge, skills, methods and technics should all physicians be competent to apply in order to be effective in the field of preventive medicine?

—How can these things be taught?

—What, if any, responsibilities does the medical school have towards the community?

During a two-day respite, those who stayed on to meet with the

deans had a brief chance to review the week's deliberations and to prepare for renewed discussion during the week to come. Then, on the morning of the first day of the Association meeting, 10 round tables met and discussed the same five topics originally considered by the conference committees. These round tables, in turn, were summarized at a general session on the last day of the Association meeting.

Some Conference Highlights

For present purposes we shall not attempt a definition of preventive medicine—an undertaking which invariably provokes lengthy debate. As during the conference, we shall use the term in a very broad sense as a challenge to promote health and, insofar as possible, to prevent disease and malfunction.

To excite students by this challenge and to impart the necessary knowledge and skills is a job for the entire medical school. At the same time, it is a job for which departments of preventive medicine have rather special responsibilities. As thus conceived, medical education aims to develop a physician who, whatever his future field of activity, will be keenly conscious of opportunities to apply existing knowledge at varying levels of prevention: to promote health, to construct barriers to disease, to interrupt its progression at the earliest possible moment, or, preventive measures having failed, to limit disability as fully as possible and to help the patient, even though he is permanently handicapped, make the most out of life.

The conference gave a great deal of attention to these various levels at which differing degrees of preventive medicine can be applied. In certain fields, for example in child health, technics are well established and results predictable. So, too, in respect to occupational health, gains from a well-run industrial health program can be documented.

In other areas, medicine is exploring unfamiliar ground. Psychological and sociological influences upon the individual and his environment are gaining recognition as important factors in determining health or its impairment. The family, more or less taken for granted as the usual unit of care by the physician of a generation ago but disregarded in the era of high specialization, again is gaining prominence in the teaching and practice of medicine; intrafamilial relationships and stresses are being studied with renewed interest in respect to their effect upon the well-being of individual members of the family.

In this broad interpretation, preventive medicine should arouse in the student an appreciation of man in relation to his environment. He comes to see health and disease, not as static entities, but rather as the manifestation of a wide variety of biological, physical, emotional and social circumstances whose interplay determine whether man will resist disease or succumb to it. Modification of these circumstances in man's favor is the exciting opportunity of the physician.

If a student truly grasps this point of view, with all its implications, as a guiding philosophy, he inevitably will come to think in terms of his responsibility to the individual patient and of his responsibility to the community as well. He will then see that the practice of preventive medicine cannot be fulfilled only within the confines of a hospital or a physician's office.

Alan Gregg, illustrating this point during the conference, asked what was likely to be the effect on a student's mind when he finds that in a small town there have been 20 cases of septic sore throat and two workers from a dairy come to the hospital for treatment. He might feel that his job was just to look after these two individuals. "But maybe, in the light of his knowledge, he may realize that he must get after the dairy too. This makes him an enemy of disease, and he has a concept of disease, and of his responsibility as a physician. This is a formidable discovery for any student to make."

How can this dynamic approach to health and disease best be taught? All five committees considered this subject extensively. The kind of questions they sought to answer show the direction of conference thinking.

Some of these questions were:

How early in the curriculum should we introduce preventive medicine, and in what ways should it relate to teaching in the basic sciences, to clinical teaching and to research?

How far can preventive medicine be taught as a distinct body of knowledge? How far are teaching programs in cooperation with other departments of both the medical school and the university more useful?

When cooperative teaching programs are desirable, what are some of the practical ways to conduct them?

Where can we teach preventive medicine best? Is it in the classroom, in the outpatient department, at the hospital bedside, or should we use the larger setting of the community itself also for teaching?

If teaching is to be conducted outside the school and hospital, how can we use community resources most effectively?

In trying to answer these questions the committees drafted no blueprints, recognizing that no one pattern would fit any two medical schools. But the wide variety of both general and specific suggestions given in answer to each—which will appear in the final report of the conference, should offer useful material to the curriculum planning committee of any school.

Two main lines of approach to teaching preventive medicine emerged, however. One concerns the importance of cooperative teaching programs, combining the contributions of all sciences, both medical and social, related to the patient; the other concerns the desirability of using more fully the resources of the community for the purpose of teaching and research.

Teaching in preventive medicine, it was generally agreed, is usually most effective when intimately connected with teaching programs in many departments of the medical school. Epidemiology, for example—conceived as an orderly scientific method for the collection and analysis of data that have to do with disease causation and behavior in a population—is most readily understood by students when taught in close relation to presentation of the action of disease agents and the opposing host responses. Likewise, since health promotion and disease prevention are components of all good medical practice, preventive medicine naturally allies itself with clinical teaching both in the wards and in the outpatient services. The nature of this relationship and ways in which it may be achieved were described by David Barr and appear on page 49 of this issue. During the conference, particular attention was given to certain programs where clinical de-

partments are well integrated in an outpatient clinic and where students learn to treat the patient as an individual rather than as a collection of complaints to be dealt with separately by specialty clinics.

Teaching programs planned in conjunction with other departments of the university also may be of value. For example, social scientists can be useful members of the teaching team to help students understand how living habits and social forces affect people's health and their reactions to sickness.

The use of the community as a laboratory for teaching was explored by several committees. It was generally agreed that it is hard, if not impossible, for a student to appreciate the social and environmental aspects of medical care when his learning experiences are confined within the walls of the medical school and hospital. Experience in a home care plan, for example, where the clinical teaching of a number of departments includes service in peoples' homes, adds new dimensions to his insight into the care of patients.

Besides a broader view of people as they live in relation to their family and neighborhood, departments of preventive medicine are called upon to teach students to learn the varied kinds of resources which the community offers both to benefit the public health and to aid the physician in serving individual patients. This type of teaching requires a different type of extramural program.

All committees of the conference urged wider use of a variety of extramural programs and facilities for teaching, although noting some obvious difficulties. In setting up home care plans, particularly, care must be taken that service and teaching be kept in proper balance. In all teaching which goes outside of the academic walls, practical considerations will arise from the amount of student time involved in outside visits, sometimes at considerable distance from the school. To be most rewarding, too, this kind of experience demands a fair degree of individual guidance and interpretation from the faculty.

Many kinds of extramural teaching activities were described and discussed, as will be found in the final report of the conference. Here are listed the views of the Committee on Comprehensive Health Care on what a student learns when he participates in a well designed family health service or other community-oriented teaching program:

- He prepares for his eventual practice as he helps serve a patient in all phases of medical care—preventive measures, treatment, follow-up—whether the patient is in a hospital, at home or ambulatory.
- He learns that preventive medicine takes a large slice of a practicing physician's time and thought; he observes, or himself helps give, specific immunization procedures, health examinations, interpretation of illness to families. Seeing a child with rheumatic fever in the setting of an overcrowded home and a large family, for example, may sharpen his understanding of the importance and the difficulty of getting preventive measures successfully adopted under adverse social conditions.
- He frequently sees early illness and the ways in which it strikes.
- He learns to deal with the day-to-day emotional problems of the patient.
- He comes to understand and appreciate the patient as a member of a social unit; he sees the pressures of family, religious or job circumstances affecting the patient's attitudes to-

ward health measures, sometimes making a particular diet difficult to follow or making a patient refuse a needed treatment.

- He sees at first hand the way the environment affects a patient's health: the effect of low income and poor housing.
- He learns about organized community services which a physician should know how to use to benefit his patients or their families; he sees the gamut of official and voluntary agencies as they touch on the lives of his families—aid to the blind, visiting nurses, school speech classes, vocational rehabilitation, sheltered workshop and many others.
- He watches and learns to practice the art of interprofessional relations; he works in a team perhaps including several medical specialties as well as nursing, medical social work and other related services. This team in turn may help a single patient deal with professional people in various community agencies, ranging from an official city health department to a school for children afflicted with cerebral palsy.
- He sees the true character and significance of the burden of disease in the community—the prevalence of respiratory disease, mental and chronic illness—not simply the severe and often less common acute illnesses seen in the hospital.
- Through all these experiences he comes to appreciate the practice of medicine as a social responsibility.

The community offers important resources for research as well as teaching. The committee of the conference devoted to research in preventive medicine concluded:

"The community laboratory makes possible the study of a whole population, sick and well, and of selected groups within it; that is, family, industry, university health service. Here studies can be made such as: studies in human growth and development; epidemiological investigations concerning the way disease is acquired; clinical and laboratory work on vaccines and sera, and drugs for prevention and treatment; engineering studies for general methods of prevention or control; studies of administrative methods; health education; economic analysis of the costs of preventive or therapeutic measures; and statistical evaluation of the incidence and prevalence of disease."

In addition to this brief preview of some of the highlights of the conference, it is also of interest to note some of the things the conference did not include (although in the course of five days of formal and informal discussions such items were few indeed). It might have been assumed that a group gathered together to consider matters related to their own special interests would take advantage of the opportunity—particularly when meeting with the deans—to make an earnest plea for more curriculum time or larger operating budgets. Such, however, was not the case. On the contrary, it is apparent that those who are in departments of preventive medicine, by whatever name the department may be called, are aware of the many advantages to be gained from cooperation with other departments in the development of effective and integrated teaching programs. If preventive medicine is to be concerned with the whole patient, it cannot do less than be concerned with the whole curriculum; it can, in fact, play an important role in bringing together some of the more highly specialized subjects and serve as an integrating force in the medical education of the future.

The Teaching of Preventive Medicine

A program of comprehensive medical care and teaching may provide the answer to integration of preventive medicine into the medical school curriculum.

DAVID P. BARR

MANY MIGHT THINK it inappropriate for an internist to express his views on the teaching of preventive medicine. I have found, however, the subject intriguing and for several reasons welcome the opportunity of discussing it. First, I believe that the teaching of preventive medicine is very important. Second, during the course of years my interests in the practice and teaching of internal medicine have approached the subject matter which currently is included in the instruction of established departments of preventive medicine. Third, I have gradually arrived at the viewpoint that separation of internal medicine from preventive medicine is artificial and undesirable and that eventually, if not soon, their interests and teaching exercises will be fused. Finally, I suspect that preventive medicine never can be a potent influence in the thought and habits of our medical students until it has become an integral part of the consideration of patients and disease in the clinic.

In thinking about what I might say and in reading some of the statements that others more learned have said recently, it became clear that preventive medicine is an inclusive term used with widely differing connotations.

To illustrate the range, one may select four recent opinions from authorities in the realm of preventive medicine or thoughtful educators who have attempted to formulate and define the scope of preventive medicine in medical teaching:

General Simmons has said: "Preventive medicine is the sum total of those services required to prevent disease and to keep people well."[1] Wilson G. Smillie takes as a keynote for his textbook, "Preventive Medicine," the statement that medicine is a social science.[2] Leonard Scheele has said that, "Social factors are at

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the very core of preventive medicine. The medical profession has the responsibility of attacking both social and physical pathology."[3] Others have brought in the concept of comprehensive medical care which they say depends upon the application of all that modern medical science can offer toward the prevention of disease.

If we are to discuss preventive medicine, we must have some clear idea of what is implied by such words as "social science," "social pathology" and "comprehensive medicine" as well as by the term "preventive medicine" itself.

It should be stated at the outset that I am deliberately excluding from consideration here those public health measures which have become a function and responsibility of the community. Pasteurization of milk, inspection of meat, purification of water, disposal of sewage and control of mosquitoes and flies have become the responsibility of specially trained and experienced public health officials. In our fortunate communities, these services presently are regarded as inalienable rights of American citizens which the government, whatever its politics, is under complete obligation to furnish and maintain. These public health measures are taken for granted and their superlative importance becomes apparent only at the moment when they cease to exist. Medical students and practicing physicians must know the general principles of environmental sanitation but need not master its details since they will rarely have responsibility for its administration.

Preventive Medicine for the Individual

Its Relation to Social Science and the Concept of Comprehensive Medical Care: The comments herein are limited entirely to preventive medicine for the individual and his family, a concept which itself requires some definition and analysis.

Fundamentally, it implies that the physician has the obligation to keep the well person well, to undertake the total health care of an individual in society. It differs from the concept of the public or community health in that it cannot be delegated to specialists. On the contrary, it is a function of every physician whether he is a family doctor, internist, pediatrician, surgeon or obstetrician.

More specifically, preventive medicine of the individual and his family consists of many activities and services. Naturally it includes appropriate use for adults as well as children of all necessary procedures for immunization and of measures for preventing the spread of infectious disease.

One of its prime essentials is continuity of medical care. Access to the physician should be unobstructed and not dependent upon the accident of illness. Examinations should be sufficiently frequent to permit early recognition of physical and psychological abnormalities. Ideally, health supervision should extend over the lifetime of an individual. Guidance of mothers should begin before the birth of their children and should continue throughout the period of the child's dependency. Adolescence will present its own physical and psychological problems.

In adults, preventive medicine will be concerned with the early detection of such serious diseases as cancer, tuberculosis and syphilis, and also with relative difficulties which may impair efficiency and well-being. It will be occupied with faulty eating habits and the prevention of obesity and food deficiencies, with the dangers of excessive alcoholism and cigarette smoking, with the avoidance of acci-

dents in the accident-prone. It will have as its goal not primarily a reduction in death rate, for all must die, but the prolongation of effective life. It will regard promotion of health in the productive years in the same category of importance as the cure of established disease. In these days of greater life expectancy, it must devote increasing attention to improvement of conditions for the aging and the aged.

Preventive medicine for the individual can draw no sharp line of distinction between diseases of the body and those of the mind. It must take full cognizance of the dangers of emotional maladjustment and the sad truth that even with all the triumphs of science many illnesses are still unrecognizable and untreatable by present physical and chemical methods and that no medical situation can be completely formulated until the attitudes, reactions and environment are taken into account.

The concept of prevention cannot be limited to early recognition of defects and measures for their prompt correction. Prescription of even the most simple form of treatment often requires for its completion frequent advice and encouragement. To be effective, therapy instituted as part of a preventive program must be supervised carefully over long periods.

Preventive medicine for the individual and his family requires consideration of social and economic factors. It cannot avoid consideration and study of the relation of poverty, overcrowding, poor housing and many other social conditions to the pathogenesis, aggravation and continuance of disease. It must take into account and utilize all the resources of the community for relief and rehabilitation, must employ optimally available social service and nursing personnel. It must explore conditions of the home which may impair health or breed disease.

With such scope medicine is indeed a social science. And if these goals can be achieved and continued with the traditional arts of diagnosis and treatment, comprehensive medicine will cease to be only a concept to capture the imagination of legislators, politicians and union leaders, and will become a reality.

It must be admitted reluctantly, however, that neither preventive medicine according to this definition nor comprehensive medical care ever has been achieved completely with any large group of people. There exist no adequate patterns for the performance of such a service. For the present, it must be regarded as a concept, an attitude of mind, an aspiration. Its goal may be fostered by discussion and precepts, but its feasibility can be determined only by extended trial.

Deterrents in Teaching

No one could depreciate efforts to achieve the preventive aspects of comprehensive medical care. The program, however, has not been universally acclaimed by the profession or even by teachers of medicine.

There are at least two sources of objection. The concept is a departure from the traditional idea that the role of the physician is to treat disease and that his whole activity is to be centered about the alleviation of suffering and established pathology. There are many who believe that the doctor should limit his purview to the diagnosis and treatment of disease, and that poverty and its accompaniments should be left to the social reformers. There are many others who are convinced that the

physician should be interested in the preventive and social aspects of disease but who fear that the extension of such a study would impair the curriculum of the medical student.

Every medical educator is oppressed by the knowledge that the curriculum of most schools has little more than 4,000 hours. In this limited time the future physician must become a scientist, a craftsman and a humanist. He must acquire a thorough knowledge of anatomic and functional pathology; he must attain skill in the performance of those manipulations needed in diagnosis and treatment; he must develop a deep understanding of human nature and human behavior.

Although all these are necessary to a well-rounded physician, the three purposes are not mutually dependent. Any one of them may be developed to a high degree without competence in the others. Inevitably there is competition between them in the crowded curriculum.

In the past, competition was chiefly between science and craftsmanship, a difficulty partially solved in most of our best schools by relegation of a large part of the craftsmanship of medicine to the postgraduate years of internship and residency. Until recently, the acquisition of humanistic interests has been left to imitation, intuition and common sense.

For 40 years scientific medicine, with chief emphasis on anatomy and physiology, has been the chief objective of medical teaching and has been responsible for the unequalled advances in public health and care of the sick. With this accomplishment in mind, many educators view as serious threat the concept of comprehensive medicine and the introduction of social science into a curriculum already overtaxed by inclusion of ever-increasing advances in scientific knowledge.

This fear, which all of us must share to some extent, has been expressed recently with some decisiveness by an influential educator who said:

"The department has been deeply concerned with the trends of medical education and after considerable discussion during the past year, general agreement has been reached that the standards of medical education in respect to internal medicine should be maintained at the highest possible scientific level and that this in the long run will best serve medical care in the community. It is believed that the incorporation of the social sciences would be of doubtful value at this time. First, because these disciplines have not yet reached a definitive maturity which can find tangible application to medicine and, second, because it seems unwise to sacrifice the limited and precious time in order to observe those aspects of the practicalities of home care which are more effectively mastered by the application of common-sense and intuition in the course of long-continued responsibility for the care of patients. Finally, it is agreed that the department of medicine should set as its goal the training of students for the highest type of modern scientific practice."[4]

One must agree with the thesis that any change in approach which would interfere seriously with the teaching of medical science could be regarded only as a backward step. If it is necessary to curtail or distort emphasis on anatomic and functional pathology, the effort to include preventive measures and apply social science perhaps should be abandoned. On the other hand, no one can escape conviction as to the importance of

the comprehensive viewpoint and the application of preventive medicine to the individual and his family. It also is extremely doubtful that this type of medicine will be practiced at all if the emphasis is focused solely upon physiological science.

In such a dilemma it may be fairly asked whether a complete separation of purposes is necessary, whether it is indeed obligatory to exclude social science in order to preserve medical science, whether the curriculum must be necessarily distorted by introducing the viewpoint and practice of preventive and comprehensive medicine.

Present Teaching

In considering the problem, it must be remembered that some elements of the preventive medicine of the individual already have permeated the instruction of medical students. For several years departments of pediatrics have approached an ideal of preventive care and teaching. Of all the specialists in medicine, the pediatrician perhaps most nearly simulates the family practitioner and advisor. His efforts long since have ceased to be curative only. He may be selected by the mother before the child is born. He assists in the instruction of the mother before and after the birth of her baby. His function is to keep the baby well, promote its growth, examine it at frequent intervals, advise the mother at every stage from the child's infancy to his adolescence. In many respects, departments of obstetrics have developed along similar lines. These newer activities of specialists have been accomplished so gradually that no one has regarded them as revolutionary or interruptive of the more accepted activities of the physician.

Also to an increasing degree, medical schools have attempted to foster the ideals of preventive medicine by establishment and maintenance of departments in which this was the chief function. By this means it has been possible to inculcate information concerning the public health and also to formulate the principles which are most relevant to preventive medicine for the individual.

Accomplishments of the departments of preventive medicine already are enormous and may be regarded as basic to this discussion. It is questionable, however, whether the teaching of the departments, admirable as it is, has had a profound influence on the thinking and opinions of medical students. Unfortunately, it has been presented for the most part by precept, lectures and exercises not closely identified with the wards and clinics which form the chief locus of attention for those who are preparing for a medical career.

Teaching Problems

Difficulties of Using Wards and Outpatient Departments: The obvious solution of this difficulty would be to introduce instruction in preventive medicine into the daily teaching of the clinical services. In the past, however, there have been significant obstacles barring the accomplishment of such a program.

The largest and most influential part of clinical instruction in our schools has been carried out in hospital wards which in many respects are ideal for illustrating organic pathology and are admirable training grounds for leisurely history taking, physical examination and the diagnosis and management of established disease. They are, however, less readily adaptable to the requirements

of preventive and comprehensive teaching.

On the wards, advanced and often irremediable diseases may be observed in people in an artificial environment far removed from their families, friends and occupations. Even with the best will and intent, students can only glimpse by story and inference the social and economic factors which influence deviation from health or aid in their removal.

A much more favorable environment for the teaching of preventive medicine should be in the outpatient departments of large hospitals, since these serve ambulant patients who may be actively engaged in their usual occupations and ways of life outside of clinic hours. Here, however, other serious difficulties are apparent.

Even in teaching hospitals many outpatient departments are poorly organized to foster the practice of preventive medicine. They are so large that correlation of activities is not accomplished easily. For the most part, they are staffed with men who are occupied chiefly with their own arduous private practices and who have no continuing responsibility for clinic organization and conduct. Generally, outpatient departments are equipped to consider only immediate or urgent problems of large numbers of people in the shortest possible time. They have insufficient leisure to lavish upon individual situations. They have inadequate contact and correlation with the communities or even the hospital they serve. Continuity of care is little emphasized. Examination of home conditions of patients is infrequent, and neglect of environment of the patients may extend even to the practitioners who have referred them. In this imperfect environment, medical students appear and disappear, often remaining in one station for only two weeks or a month. They may be fortunate if they see the same patient more than twice.

There are other weaknesses. Teachers prepared to consider preventive problems in detail are few in number since most of the instructional staffs in our clinics or schools have been educated at a time when emphasis was almost entirely on the medical science represented by anatomical and chemical pathology. Few indeed have been interested in continuing care or in preventive aspects. Others actually may feel some antagonism to such an extension of medical practice.

Prerequisites for Effective Use of Outpatient Departments: Notwithstanding the difficulties, outpatient departments of large hospitals probably offer the most favorable environment for teaching preventive medicine. It behooves us, therefore, to examine them carefully with the objective of making them more suitable.

Several prerequisites for effective teaching of preventive medicine in outpatient departments include:

1. The most crucial requirement is a group of influential clinical teachers representing several if not all the departments engaged in teaching third and fourth-year medical students.

2. Facilities which encompass all the needs for diagnosis and treatment must be available.

3. There must be close relationship between the outpatient department and the social agencies in the community.

4. Admission policy to the outpatient department must be so regulated as to supply a sufficient number

of patients without overcrowding of the facilities.

5. The teaching programs of several clinical departments must be closely and constantly correlated. This need would apply with special urgency to the departments of medicine, pediatrics, psychiatry and preventive medicine.

6. The school's curriculum must be so arranged as to permit each student to attend the same patients over relatively long periods of time.

7. There must be a staff which can devote itself without interruption to the organization, correlation and operation of the service and teaching.

A Comprehensive Program

In existing organizations, the arrangement of even one of these prerequisites may be difficult. Tradition, rigidity of curriculum, interdepartmental barriers, lack of funds and paucity of interested teachers are some of the factors which may interfere. Nevertheless, in at least one locus, all the initial barriers have been partially surmounted and a program for comprehensive care and teaching established.

A salaried full-time staff of especially interested representatives of the departments of medicine and pediatrics forms a nucleus for the organization of the enterprise and for the correlation of its various functions. The department of preventive medicine focuses all its fourth-year teaching in the clinic. Salaried consultants on a part-time basis represent the departments of psychiatry, surgery and gynecology. A social service worker and a visiting nurse devote their entire attention to the venture. Facilities for diagnosis and treatment are more than sufficient. Contacts with social agencies in the community are close and only await development. Admissions to the clinic are regulated strictly to teaching requirements. And most important of all, the curriculum of the medical college has been rearranged. Without interruption or significant curtailment of any previous teaching, a continuum of 22½ weeks in medicine, pediatrics, psychiatry and preventive medicine has been provided for each senior medical student. The enterprise is not directed by any one department, but is operated by a committee representative of the educational, clinical and administrative interests of the medical center.

With such an organization, the attainment of several objectives is sought. It is hoped especially that through the program each student will have opportunity to follow his patients long enough to permit thorough acquaintance with their environmental, home and family conditions as well as their strictly medical problems. It is hoped that the student may consider not only curative but also preventive aspects, and may relate and evaluate physical and emotional components of disease; that he may cease to regard his patients as primarily medical, surgical or psychiatric problems, but may think instead of them as men, women and children facing a particular and often distressing life situation. Above all, it is hoped that the previous teaching of diagnosis and curative medicine and of physiological science never may be stultified by the program but, on the contrary, may be enriched and illuminated by a broader view and a deeper understanding.

The enterprise as outlined must be regarded as an experiment in medical education. No one can say as yet how much of the concept of comprehensive medicine and of preventive medicine for the individual

and his family is practically attainable or economically feasible. It is, however, only by trial that these questions can be answered. It may be that such experiments, appropriately modified to meet local conditions and situations, will serve to remove preventive medicine from its present position of semi-isolation and less than optimal influence, and will aid in pointing the way to better preparation of future practitioners.

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The Teaching of Understanding

"THE UNDERGRADUATE STUDENT in medicine, if given the chance and proper experiences, readily recognizes the fact that the emotional, economic and environmental features of illness are equally as important as the physical feature. He needs little imagination to know that the four factors are so interwoven in the patient's subjective symptoms of his disease that not one can be considered separately. Consequently, the medical student must learn how to assume the responsibility, either himself or through community health and welfare agencies, for the satisfactory solution of these social problems as a part of the medical diagnosis and treatment. The student must also understand and accept the responsibility for the preventive medical services of his families, for it is not the individual alone but the family which is the social unit. When one member of the family is involved in difficulties of any kind all are involved."—Quoted from "Medical Education and the Changing Order," by Raymond B. Allen, in an article on "Public Health and Preventive Medicine for Medical Students," by Lee Powers, in the *Journal of the Association of American Medical Colleges*, November 1949.

The Objectives of Undergraduate Medical Education

UNDERGRADUATE MEDICAL education must provide a solid foundation for the future physician's development. It should not aim at presenting the complete, detailed, systematic body of knowledge concerning each and every medical and related discipline. Rather, it must provide the setting in which the student can learn fundamental principles applicable to the whole body of medical knowledge, establish habits of reasoned and critical judgment of evidence and experience, and develop an ability to use these principles and judgments wisely in solving problems of health and disease.

Undergraduate medical education cannot achieve these aims if the student is relegated to a passive role. It must provide incentive for active learning on the part of the student. This can best be done by giving him definite responsibility in real, day-to-day problems of health and disease. This responsibility must, of course, be carefully graded to the student's ability and experience and must be exercised under careful guidance by the faculty.

Note Explaining the Derivation of the Objectives of Undergraduate Medical Education:

WHEN THE Planning Committee for the Conference on Preventive Medicine in Medical Schools began its work in the summer of 1951, one of its first actions was to request from the Association of American Medical Colleges a statement as to the objectives of undergraduate medical education. The committee felt the need of such a statement to serve as a frame of reference for the planning of the Conference and for the development of objectives in the teaching of preventive medicine.

In the effort to meet this request, a very tentative draft was developed at the central office and sent to all the members of the Executive Council of the AAMC on August 31, 1951. During the next year Council members not only sent in their suggestions and revisions, but in several instances they routed the proposed statement through their staffs and returned the individual comments. As the result, the statement went rapidly through six revisions and it was the Sixth Revision that was finally mimeographed and sent to Colorado Springs for use in the Conference on Preventive Medicine, November 3 through 7, 1952.

The Seventh Revision incorporated many of the suggestions made at the Conference on Preventive Medicine in Medical Schools. The Eighth Revision, which appears above, includes additional suggestions made by staff members particularly from the University of Colorado and Western Reserve University School of Medicine.

The "Objectives of Undergraduate Medical Education," Eighth Revision, 1953, must then be considered a document still in development and under revision. Comments and suggestions are invited and should be directed to Dean F. Smiley, secretary, Association of American Medical Colleges, 185 N. Wabash Ave., Chicago 1—*The Editors.*

Given incentive to learn and guidance toward the grasp of principles, with the problems of health and disease as a frame of reference, the student will build the necessary foundation for his career in medicine, be it practice (general or limited), teaching, research or administration.

In working toward this fundamental objective, undergraduate medical schools must strive to help the student to: acquire basic professional knowledge; establish essential habits; attain clinical and social skills necessary to the best utilization of that knowledge; and develop those basic intellectual attitudes and ethical or moral principles which are essential if he is to gain and maintain the confidence and trust of those whom he treats, the respect of those with whom he works and the support of the community in which he lives.

These five aims are obviously not distinctly separable, but are mutually interdependent. All together they summarize the desirable characteristics of the responsible professional person medical education is attempting to produce.

Taking these five aims as a basis for specification, the more detailed objectives of undergraduate medical education are:

A. To help the student acquire requisite knowledge:

1. Of the normal development, structure and function of the human being.

2. Of the common disorders of development, structure or function.

3. Of the manner in which physical, chemical and biological agents as well as hereditary factors, psychological factors, living habits and social forces affect the human being favorably or unfavorably.

4. Of the availability of a wide variety of diagnostic, operative and other therapeutic procedures in the hands of specialists.

5. Of the general techniques and resources available both to the individual and to the community for the prevention of disease and the maintenance of health.

6. Of the social and cultural settings in which medical education and practice are carried on.

B. To help the student establish essential habits:

1. Of continuing self-education, through critical reading and evaluation of information, and through use of the scientific method in approaching medical problems.

2. Of thoroughness and accuracy in carrying out diagnostic and therapeutic procedures.

3. Of consideration and perceptiveness in the handling of patients.

C. To help the student achieve basic skills:

1. In eliciting an accurate and adequate history.

2. In making physical examination and utilizing effectively such instruments as are commonly used by all physicians.

3. In performing and interpreting essential laboratory tests and in requesting and interpreting special studies conducted by technicians or by specialists.

4. In using assembled data to provide a valid diagnostic appraisal and an effective course of action calling upon additional specialists' services and community services as needed.

5. In interpreting findings and diagnosis to patients in such a way as to give hope and understanding and to avoid undue apprehension and pessimism.

6. In winning and holding the confidence of patients and their families.

7. In working in the medical team of physicians, nurses, social workers, physical therapists and others.

8. In working in the community team of official and voluntary institutions and agencies providing health services.

D. To help the student develop sound attitudes:

1. Of viewing individuals in their entirety as complex human beings in a complex and changing environment.

2. Of seeking ways to promote and to maintain patients' health, understanding that it is more effective to prevent disease than to cure it.

3. Of approaching each ill patient as a person with disordered development, structure or function, the cause and cure of which are problems to be solved by means of careful scientific investigation.

4. Of basing the plan for cure, rehabilitation or adjustment to permanent handicap upon the joint efforts of the medical team and patient to assist nature's healing powers.

5. Of expecting to be a student all his life and to learn and to revise old thinking as long as he continues to practice medicine.

6. Of accepting the fact that the physician can cure sometimes, relieve often, prevent frequently, comfort always.

E. To help the student gain an understanding of professional and ethical principles:

1. Of being willing to accept the responsibility for the initiation and continuing coordination of all of the efforts directed toward the patient's problem or problems as they relate to his health.

2. Of establishing definitive diagnosis and treatment only after adequate study.

3. Of supplementing one's own judgment, as occasion requires, with the wisdom and counsel of competent medical specialists.

4. Of charging fees in proportion to the time, skill and special facilities required and with due regard for the patient's economic circumstances.

5. Of being mindful of his obligations to the community as a physician, with reference to the community's problems of health and disease, and equally as a citizen.

6. Of respecting the rights and dignity of patients and the reputation of one's colleagues.

7. Of extending freely his professional aid in any emergency.

THE OBJECTIVES of undergraduate medical education do NOT include:

1. Attempting to provide the *detailed* systematic knowledge of anatomy, biochemistry, physiology, microbiology, pathology or pharmacology required of graduate students majoring in one of these fields.

2. Attempting to provide a detailed presentation of *all* the disorders that affect the human being.

3. Attempting to provide a detailed presentation of all the physical, chemical and biological agents, hereditary factors, psychological factors, living habits and social forces that may affect the human being favorably or unfavorably.

4. Attempting to teach the techniques required for the successful practice of the various specialties.

Editorials and Comments

Teaching Institutes

GEORGE PACKER BERRY'S Presidential Address, given at the 63rd Annual Meeting of the Association of American Medical Colleges, is published as the lead article in this issue of the Journal. Dr. Berry reports on the progress of an important endeavor: a six-year program which will bring medical college teachers and medical college administrators together for mutual discussion of ways to increase the effectiveness of medical teaching.

In his address, Dr. Berry traces the growth of this endeavor. He cites some experiments in medical education which attack the problem of integrated teaching methods. He discusses the values derived from the conferences conducted jointly by the AAMC and the American Psychiatric Association in 1951 and 1952. And he indicates the benefits and experience gained from the Association's first Teaching Institute, the Conference on Preventive Medicine in Medical Schools, which was held immediately preceding the 63rd Annual Meeting in November 1952.

Plans for a similar conference concerned with the teaching of physiology, biochemistry and pharmacology, to be held October 19-24 in Atlantic City preceding the 64th Annual Meeting, are described in detail by Dr. Berry. It is the hope of the Committee on Planning Teaching Institutes, of which he is chairman, that this 1953 conference will be one of a series of teaching institutes through the coming years, in which teachers and deans will look critically at medical teaching. Partial support for the conference has been provided by the Public Health Service's National Heart Institute, and additional funds are being sought.

Dr. Berry also reports on further plans for teaching institutes which, it is hoped, will "explore the entire structure of medical education." Proposed fields of study for subsequent years are: pathology, microbiology, immunology and genetics; anatomy, histology, embryology and anthropology; medical ecology; clinical teaching including the internship; specialty training and the continuing education of physicians.

Dr. Berry's report of progress in this important effort is stimulating. Dr. Darley, the president, Dr. Hinsey, the chairman of the Executive Council, and all members of the Council are convinced that this projected series of Institutes offers a practical approach to a group of problems that lie at the heart of medical education. They ask the cooperation of all who are interested in seeing medical education move steadily toward realization of its greatest potential.

Requirements for Admission to Medical School

SOME YEARS AGO several schools interested in preparing teachers for work in the public schools recommended that the best introduction to the study of education was a study

of what the young child is like and how he grows and develops, and the study of modern society and its demands upon the growing child.

Medical educators have arrived at somewhat similar recommendations for the type of education that can best precede entrance into medicine.

Potential medical students are not advised to devote their liberal arts college career to physics, chemistry, biological science and English and then get into medical college at the earliest possible moment. Instead, there is emphasized the importance of the student's obtaining an understanding of man as an animal and, also, as a thinking, emotionally reacting, always striving human being, and an understanding of our modern society in which man is subjected to stresses and strains in a manner unknown to previous generations.

Though the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association have required until this year only two years of liberal arts college study preliminary to medical school admission, the individual medical schools have steadily raised their standards beyond this. Of the class entering medicine in the fall of 1951, only 1.1 per cent had had but two years of college work; 21.5 per cent had three years; 7.4 per cent had had four years of college work but had received no degree; 70 per cent held baccalaureate degrees.* All but one of the 79 medical and basic science schools in the country now require three or more years of college study preliminary to entrance to medical college.

With these facts in mind, the recent actions of the Council on Medical Education and Hospitals and the Association of American Medical Colleges should be readily understood.

"The minimum educational requirement of the Council on Medical Education and Hospitals for students entering medical school after January 1, 1953, will be three years of college training for the average student. Prior to this year the Council had since 1918 required two years of college and since 1938 had recommended three years. Although the present minimum requirement is three years, it is recommended that, in order to acquire a broad general education, premedical students take the full, four-year college course. In rare instances, a medical school will be justified in admitting an exceptionally able student at the end of two years of college."*

Subsection I of Section 2 of the By-Laws of the Association of American Medical Colleges has been amended to read as follows: "A good general education including the attainment of competence in English, biology, chemistry and physics is essential for the comprehension of the medical school curriculum. For most students this will require three or four years of college education. Superior students may, in selected cases, be considered acceptable for admission to medical school after only two years of collegiate work. In all instances the final judgment as to admissibility of these superior students will rest with the individual medical school."

Wider Participation

SERVING ON THE Executive Council or on one of the 18 committees of

*Donald G. Anderson, M.D.; Francis R. Manlove, M.D.; Anne Tipner, "Medical Education in the United States and Canada," Fifty-second Annual Report on Medical Education in the United States and Canada by the Council on Medical Education and Hospitals of the American Medical Association. *J.A.M.A.*, Vol. 150 pp. 99-141, September 13, 1952.

the Association of American Medical Colleges not only contributes to the work of the Association but it also helps administrators and teachers through sharing the thinking and problems of their colleagues.

In the effort to spread participation more widely, the whole committee structure of the Association was restudied at the Colorado Springs meeting of the Executive Council and many changes were made. The general assumption was that a representative could make his best contribution to the work of the Association if he was placed on the committee in whose work he was most interested and then, generally, was not asked to serve on other committees.

Executive Council members hope, too, that at the 64th Annual Meeting the Association will approve revision of the constitution to increase the number of elective members of the Executive Council from four to six. In addition, by naming the Nominating Committee early in the year, and inviting the membership to send suggestions, a wider participation of medical educators in the affairs of the Association will be achieved. This plan was followed last year, apparently to the satisfaction of all concerned.

APPLICANT STUDY

In the report on the study of applicants which appeared in the February issue of the Journal of MEDICAL EDUCATION, a note should have been added to the entry in Table 2 for Meharry Medical College, stating that the figures included for this school were incomplete, being limited to reports received in the Association office prior to November 1, 1952. Meharry now reports it acted upon 442 applications.

Unfortunately, the applicant study is a long and complicated task. Unless the records are closed by October 1, the task cannot be completed for preliminary report at the November meeting of the Association or for publication of a complete report for the January issue of the Journal.

JOHN M. STALNAKER,
Director of Studies

NEWS DIGEST

Actions by Executive Council

Plans for the Association's 1953 Teaching Institute were discussed by the AAMC Executive Council during the February 6–7 Council meeting in Chicago. Functions and membership of the various Institute committees, as outlined by the Executive Council, were:

1. The Committee on Planning for Teaching Institutes is responsible for raising the funds for the basic support of the series of six institutes. Thus far it has raised $45,000 for the 1953 institute. Members are Dr. George Packer Berry, Dr. Stanley Dorst, Dr. C. N. H. Long.

2. The Policy Committee for the the 1953 Institute will select the Steering Committee with its four sub-chairmen, and will see that all United States medical schools are represented at the conference. Members are Dr. Ward Darley, Dr. George Packer Berry, Dr. Stanley Dorst, Dr. C. N. H. Long, Dr. Howard Lewis of Michigan representing biochemistry, Dr. Ralph Gerard representing the survey of physiological sciences, Dr. Wallace Fenn of Rochester representing physiology, and Dr. Julius Comroe Jr. of Pennsylvania representing pharmacology.

3. The Steering Committee for the 1953 Institute will organize the conference and nominate those to be invited. Members are Dr. Comroe, chairman; Dr. John McK. Mitchell, co-chairman, and four sub-chairmen: Dr. George H. Acheson of Cincinnati, Dr. Eugene Landis of Harvard, Dr. Gordon Moe of State University of New York in Syracuse, and Dr. Abraham White of Yeshiva.

4. The staff to handle the correspondence and finances of the conference will be John M. Stalnaker, director of studies for the AAMC, and Mrs. Helen Morford, both of the Association's central office. Secretarial assistance will be provided in Dr. Comroe's Philadelphia office.

Among other actions, the Executive Council:

—Approved the terms of the agreement with the W. K. Kellogg Foundation under which the Association is to receive $4,000 for publication of the report of the Conference on Preventive Medicine in Medical Schools.

—Agreed that the AAMC Committee on Licensure Problems work jointly with a similar committee to be appointed by the AMA Council on Medical Education and Hospitals. The secretaries of the two councils were instructed to arrange two meetings a year of the joint committee with the Federation of State Medical Boards, one to be held at the time of the AAMC Annual Meeting, and the other to be held during the Congress on Medical Education and Licensure.

—Instructed the secretary to begin building files of (1) agreements between medical schools and their affiliated hospitals, and (2) reports on foreign schools.

—Discussed revision of the Constitution and By-Laws and instructed the secretary to bring in a second set of recommendations as to this revision at the next Council meeting, scheduled for May 29-30 in New York City.

President's Commission

Excerpts from the statements of hundreds of people who participated in the regional conferences of the President's Commission on the Health Needs of the Nation have been published in a separate volume of the commission's report. Titled "The People Speak," the book contains selections from the testimony delivered by nearly 400 witnesses who appeared at the public hearings held last August and September in Phila-

delphia, Dallas, Raleigh, Minneapolis, St. Louis, Detroit, Cleveland and San Francisco.

Hospital Care

Progress in national studies on the problem of financing America's hospital care is described by the Commission on Financing of Hospital Care in a recent report. The report reveals that daily cost of patient care increased 79 per cent in the years between 1946 and 1951. The commission, an independent nongovernmental agency, seeks to discover what part of the increase is due to rising costs and what part to increased services.

Hall of Fame

Plans for a worldwide Surgeons' Hall of Fame to be established in the Chicago headquarters of the International College of Surgeons have been announced. A building for the hall has been purchased and work has already begun on blueprints for its design, which will include individual niches for busts of great surgeons and bronze plaques detailing their contributions to human welfare.

Oak Ridge Institute

An advanced course in autoradiography and three basic courses in radioisotope techniques are course offerings of interest to medical and biological personnel planned this spring and summer by the special training division of the Oak Ridge Institute of Nuclear Studies. Application forms and additional information may be obtained from the Special Training Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tenn.

WHO Head Nominated

Dr. Marolino Gomez Candau of Brazil has been nominated by the executive board of the United Nations World Health Organization to succeed Dr. Brock Chisholm of Canada as its director general next July. Dr. Chisholm has announced his intention to retire. Decision on Dr. Candau's nomination will be made in May.

Heads Ford Foundation

H. Rowan Gaither Jr., a San Francisco lawyer, has been appointed acting president of the Ford Foundation. He takes over the duties of Paul G. Hoffman, who recently resigned as president. Mr. Gaither's appointment is a temporary one, to be terminated when a permanent successor is elected.

Meetings

Congress on Medical Education

Problems of medical school teaching and administration were discussed at the 49th Annual Congress on Medical Education and Licensure, held February 8-10 in Chicago. The meeting was sponsored by the Advisory Board for Medical Specialties, the Federation of State Medical Boards of the United States, and the Council on Medical Education and Hospitals of the American Medical Association.

MEDICAL EDUCATION: Sessions in the morning and afternoon of February 9, directed by the Council on Medical Education and Hospitals, were devoted to various aspects of medical education.

Dr. H. G. Weiskotten, council chairman and presiding officer of the morning session, opened the program with a review of the history of the congress, first held in 1904. He discussed some of the problems solved by medical educators in the past and some which are facing them today.

Dr. Weiskotten cited the growing

appreciation of the fact that there are psychological, sociological, economic and environmental factors that physicians must deal with if they are to meet their responsibilities.

Financial problems of medical education were discussed by Dr. Joseph C. Hinsey, AAMC Executive Council Chairman, who served as a member of the President's Commission on the Health Needs of the Nation. Dr. Hinsey told of some of the questions studied by the commission and described how certain of its recommendations were determined.

While the demand for physicians still far outruns the supply, Dr. Hinsey pointed out that the increased enrollment and graduations from medical schools will make maintenance of the 1949 physician-population ratio possible in 1960, the year used by the commission as a base for future need.

Two problems must be decided before the puzzle of medical manpower is solved, according to Dr. Hinsey. These are getting better distribution of medical personnel of all kinds and meeting the requirements that will come when demand catches up with the need for comprehensive medical service.

Expansion of medical education is necessary, he said, but "as medical educators we must be on guard to see that these pressures do not deteriorate standards."

Four barriers that keep qualified candidates from entrance to medical schools were listed by Dr. Hinsey as (1) inadequate quality of educational preparation, (2) costs of medical education which inhibit students with limited financial means, (3) the limited capacity of the nation's medical schools, and (4) geographic barriers.

Top priority in the future, he said, should be given to "high quality of students and staff, highest standards in their performance, and proper balance in our over-all programs." In this, he said, adequate funds will be of great assistance.

PRESIDING officer at the Monday morning meeting was Dr. H. G. Weiskotten (left), chairman of the Council on Medical Education and Hospitals. Dr. Joseph C. Hinsey (right), AAMC Executive Council Chairman, also spoke at the Monday morning session.

Dr. S. Howard Armstrong, professor of medicine at the University of Illinois, discussed the use of private patients in medical education. While no immediate solution for using private patients for teaching has been found, Dr. Armstrong stated that he believed progress had been made by making the profession as a whole aware that the problem exists.

The responsibilities of hospital administrators and members of the medical staff in providing adequate teaching for medical education programs were stressed by Dr. Armstrong. He also pointed out that the individual physician who is a member of a hospital medical staff has responsibilities in carrying out teaching duties on the wards or, in some cases, with private patients.

Experimentation in medical teaching was discussed by faculty of the Western Reserve University School of Medicine, where a new curriculum began this year. Dean Joseph T. Wearn, Dr. John L. Caughey Jr., associate dean; Dr. T. H. Ham, professor of medicine, and Dr. John W. Patterson, associate professor of ana-

tomy, presented details of the development of the project.

Dr. Wearn, who acted as panel moderator, said the curriculum was approved by the faculty after discussions extending back to 1945. He stressed that the experiment would continue over the years. Such changes as are necessary would be introduced to make it more satisfactory. Although evaluation is not yet possible, Dr. Wearn said that the first-year students' use of the medical library was much greater than was customary.

Development of the curriculum was traced by Dr. Ham. He explained that it got under way in 1948, when the educational committee of the faculty received $435,000 from the Commonwealth Fund and a full-time faculty member was appointed to study and coordinate curriculum planning.

The experimental program was set up democratically. Each department was asked to report on its objectives, present program, deficiencies, plans for the future, any duplications or overlapping observed, and the relationship of the individual department to the broad objectives of education. Each report was circulated to other departments and comments were invited.

The first year's work was described by Dr. Patterson. He listed functions of the curriculum as furnishing basic skill and knowledge, instilling proper attitudes, and teaching habits of self-education. Emphasis the first year is on normal structure, function and growth. The student is assigned to a prenatal patient one month before delivery and follows her progress and that of the child for the remainder of the year.

In explaining further details of the background of the experiment, Dr. Caughey said that the Western Reserve program is the first comprehensive curriculum experiment under way in the nation's medical schools. The program, he said, emphasizes correlation of preclinical and clinical subjects, and is predicated on the idea that the medical student is an adult and a maturing fellow student.

PANELS: The Monday afternoon session was divided into two panel discussions: the internship in modern medical education, and the continuing impact of the national defense program on medical education.

Participants in the panel on internship included members of the AMA Advisory Committee on Internships, established more than two years ago by the Council on Medical Education and Hospitals. The committee recently submitted its report which recommended changes in the AMA standards for approved internships.

Some of the questions discussed by the committee were: Is there a place for the internship in medical education today? What should be the content of the internship? What changes should be made in the essentials of an approved internship? What may hospitals do to enable them to secure interns?

Among suggestions reported by the panel during the meeting were:

—There is a place for the internship today. It is an important part of the education of a doctor, serving as the time when he translates his lectures and laboratory learning into active experience.

—A minimum internship period of two years is needed, with the work of the second year not duplicating that of the first. Members of the committee felt that rotating types of internship were preferable, such internships to be divided into three months each of medicine and general surgery, and the remaining period in a few of the specialties, with no service for less than two months.

—Rounds with staff physicians play an important role in intern training.

—Outpatient experience is an important part of intern training. The committee has recommended further development of outpatient facilities and hospitals. It has suggested that no

new hospitals apply for intern training approval without such facilities and, in the future, hospitals without outpatient departments be removed from the approved list.

—Other suggestions for revisions in the approval standards include: (1) increasing the proportion of autopsies from 20 to 25 per cent; (2) adoption of the two-thirds principle, whereby hospitals would be temporarily removed from the approved list if they failed to get two-thirds of their intern quota in two consecutive years; (3) removal from the approved list of hospitals offering unusually high stipends as an inducement for interns.

The second panel group, which considered the national defense program and medical education, operated in a question-and-answer manner, with qualified panel members answering queries from the floor.

Also discussed were revisions of Public Law 779 supported by the Department of Defense. The present law, which governs the drafting of physicians, is due to expire June 30, 1953. Suggestions for the new law are:

1. No change in the priority of call. Group I would include those men who have seen no prior active service and would be called by age. (Under P.L. 779, these men are classified Priority III.) Group II would include those men who have had some military service and would be called according to the amount of service time already accumulated. Those with least service would be subject to first call.

2. Clarification of "active duty" time to include all military service except that spent in educational programs such as V-12 or ASTP. Credit also would be allowed for active duty in any allied force.

3. The granting of commissions to alien physicians.

4. Provisions of duties and functions of the National Advisory Council, including such authority as establishment of local committees.

5. Provisions for residency training programs so that some basis for advance planning of the physician supply needed for civilian and military populations can be maintained.

6. Appointments of drafted physicians and reservists in grades commensurate with their professional experience, education and ability.

7. Termination of reserve commissions on completion of stipulated

MEMBERS OF the internship panel were (standing, left): Dr. Granville A. Bennett, Dr. John B. Youmans, Dr. John C. Leonard, Dr. Ulrich R. Bryner, Dr. J. Robert Willson, Dr. John R. Paine, Dr. John Romano; (seated, left) Dr. S. Howard Armstrong, Dr. Edward H. Leveroos, Dr. Victor Johnson, Dr. John McK. Mitchell.

terms of active military service.

8. Continuation of the age limit for selective service at 51 years.

9. Extension of the law to July 1, 1955.

FEDERATION SECTION: The osteopathic problem was discussed by Dr. Walter E. Vest, outgoing president, during the February 10 program devoted to the Federation of State Medical Boards.

Dr. Vest advocated integration of licensure of osteopaths with doctors of medicine. He suggested this might be accomplished by composite state boards of licensure which would contain osteopathic representation in about the same proportion as the number of osteopaths and doctors of medicine licensed in the state when the board is formed. Such boards would have the power to license medicine and surgery in all branches, and grant equal rights and privileges. Osteopaths wishing to practice without prescribing drugs and/or surgery would be so licensed after passing an examination in the basic sciences and osteopathy.

The second step, according to Dr. Vest, would be admission of those osteopaths with full medical licensure to postgraduate training in regular medicine and eligibility to apply for membership in county medical societies. The third step would be inspection of osteopathic schools by the Council on Medical Education and Hospitals. Simultaneously with permission for inspection, these schools would be free to seek teaching personnel who are doctors of medicine. An effort would be made by medicine to help raise their standards and work, especially in the basic sciences. When an osteopathic school became classified as acceptable, matriculants would be given the choice of graduating as doctors of medicine or osteopathy.

Full integration, Dr. Vest said, is a long process. A chief difficulty will be the overcoming of the prejudices of diehards in each group. He felt, however, that it would be better for doctors of medicine to help than to force osteopaths to "creep, and intrude, and climb into the fold."

Also presented during the February 10 program was a panel discussion of multiple choice objective examinations. Experiences with multiple choice tests were described by representatives from Missouri, Oregon and Wyoming. Work of the National Board of Medical Examiners in multiple choice examinations during the past few years also was reviewed.

New officers elected by the federation include: President, Dr. John M. McCann, Youngstown, Ohio; president-elect, Dr. Elmer E. Schnoor, Grand Rapids, Mich; vice president, Dr. J. D. McCarthy, Omaha; secretary-treasurer (re-elected), Dr. Walter S. Bierring, Des Moines.

Dr. Louis H. Bauer, president of the AMA, discussed medical licensure at the dinner, February 9. In his address, Dr. Bauer said that the value of licensure has decreased in recent years because of the licensing of "cultists." "One cannot compromise with fraud," Dr. Bauer said.

His solution to the problem of licensure is steady, intensive and widespread education of the public. He asked that present methods of certification and the value of specialist society memberships be studied carefully in the light of another problem—possible licensure of specialists within the various states.

OTHER REPORTS: Included in the two-day meeting were discussions of the work of the National Fund for Medical Education by Chase Mellen Jr., director of the fund, and the American Medical Education Foundation by Dr. Donald G. Anderson, secretary-treasurer of the foundation. Each reported on efforts to date and described plans for expansion of both programs.

The program and details of organization of the first world conference on medical education were outlined

by Dr. Bauer. The conference will be held in London, August 22–29.

Symposium on Stress

Human reactions to stress situations will be the subject of a three-day symposium to be held at the Army Medical Service Graduate School in Washington, D.C., on March 16-18. The symposium is sponsored by the Army Medical Service Graduate School and the National Research Council's Division of Medical Sciences. Thirty-one research scientists, including representatives from England and Sweden, will discuss physical and psychological stress factors and their interaction in producing human breakdown or impairment of competence. Some 300 military and civilian doctors will attend.

Forum on Nation's Health

A two-day forum aimed at advancing the nation's health will be featured at the annual meeting of the National Health Council to be held March 18-20 in New York City. Current publication of the report of the President's Commission on the Health Needs of the Nation provides the forum with new material to consider. Mrs. Oswald B. Lord, council president, said that participants in the meeting will try to evaluate the commission's findings and recommendations in light of the objectives and programs of the council's 42 national member organizations.

Fellowships, Grants, Awards

Ford Study

Fifty scholars and scientists will be involved in a six-year program for advanced study in social relations and human behavior, recently announced by the Ford Foundation. The $3,500,000 program, to be headed by Frank Stanton, president of the Columbia Broadcasting System, will get under way soon.

Scientists will meet annually at the Center for Advanced Study in Behavioral Sciences, to be set up for the project. One major factor in the program will be the encouragement of collaboration across traditional departmental lines in an attempt to further the scientific study of man.

Borden Nominations

Nominations for the 1953 Borden Award in the Medical Sciences are now open and must be received by July 1, 1953 in order to be considered this year. Dr. Ashley Weech, University of Cincinnati, is chairman of the AAMC Committee on the Borden Award.

Nominations are received by Dr. D. F. Smiley, Room 1001, 185 N. Wabash Ave., Chicago 1.

Nobel Prize

Dr. Selman A. Waksman, professor of microbiology, Rutgers University, has been awarded the 1952 Nobel Prize for medicine. He received the award for his work as co-discoverer of streptomycin and for the development of its use in the treatment of tuberculosis.

Albert Lasker Award

The Albert and Mary Lasker Foundation and the American Heart Association have announced the establishment of the annual Albert Lasker Award "for distinguished achievement in the field of cardio-vascular diseases—the leading cause of disability and death in the United States." Dr. Paul Dudley White, Bos-

ton, was named first Award winner.

Albert Lasker Awards also have been made annually since 1946 by the foundation through the American Public Health Association. They are given to acknowledge research or other contributions in the fight against those diseases which are principal causes of death and disability, and for distinguished service in the field of public health administration.

Educational Exchange

Latest information on government educational exchange grants appears in a booklet obtainable for 10 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington 25. The booklet contains information regarding graduate study, teaching, postdoctoral research and specialist adviser appointments to foreign countries.

College Briefs

Albany Medical College

Dr. PRADISTH CHEOSAKUL, instructor in biochemistry and acting administrator of the biochemistry department, recently completed a four-week course in the techniques of using radioisotopes offered by the special training division of the Oak Ridge Institute of Nuclear Studies. He was one of 32 research workers enrolled in the course. Dr. Cheosakul is using isotopes in the study of a biochemical breakdown of urea and the action of alloxan in causing diabetes.

Dr. ROBERT W. GRAVES, professor and director of the department of neurology at Albany Medical College and neurologist-in-chief at Albany Hospital, has been appointed special consultant to the National Institutes of Health at Bethesda, Md. Dr. Graves' consulting work will be in connection with the Institute of Neurological Diseases and Blindness which was established by the Federal Security Agency in 1950.

Boston University

Dr. WALTER L. MENDENHALL, professor of physiology and pharmacology for 26 years, died in Independence, Iowa, on January 18. Dr. Mendenhall was associated with the school of medicine from 1921 until 1947, when he retired as professor emeritus.

University of California

Two unusual $25,000 gifts to aid in the education of medical students and nurses "for their great and highly needed services to mankind," have been presented by the Henry J. Kaiser Family Foundation to the University of California. The gifts provide for grants-in-aid to medical students in the schools of medicine in San Francisco and Los Angeles and for graduate nurses in San Francisco, Berkeley and Los Angeles.

Chicago Medical School

The Lesavoy Foundation has agreed to contribute funds necessary for purchase of land in the Medical Center tentatively allocated to the Chicago Medical School. A contribution of $100,000 has already been received from the foundation.

Several benefit dinners given recently in New York City resulted in raising more than $32,000 for the medical school.

Three new research grants totalling $24,105 have been received. Dr. JAMES G. SHAFFER, head of the department of microbiology and public health, received $10,098 from the Public Health Service for studies on

the growth requirements of endamoeba histolytica. Dr. PIERO P. FOA, professor of physiology and pharmacology, has been granted $7,635 from the Office of Naval Research for a study of pancreatic physiology. Dr. ISRAEL DAVIDSOHN, professor and chairman of the department of pathology, has received a renewal grant of $6,372 from the Public Health Service for work in "Hemolytic Anemia; Immuno-Hematologic Studies."

University of Cincinnati

A new test for early detection of toxemia of pregnancy developed in the obstetrical laboratory of the college of medicine was described February 17 by Dr. NICHOLAS S. ASSALI when he addressed the annual Obstetrical and Gynecological Assembly of Southern California. The detection test grew out of research undertaken since 1947 at the university's laboratories in Cincinnati General Hospital, based on clinical knowledge that pregnant women need much less spinal anesthetic than nonpregnant patients and that they are susceptible to fainting.

Duke University

Southern pathologists took part in a joint meeting at the medical school on February 14 as part of a public education program in legal medicine. The public and all interested physicians were invited to attend the closing session of a two-day symposium. General topic for the meeting was "Pathological Problems in Legal Medicine," given as an educational feature related to a bill now pending before the North Carolina legislature to provide a new coroner's system in the state.

Emory University

The organization of the Emory University Clinic on January 1, 1953, has been announced. The clinic is a partnership arrangement of faculty members of the school of medicine who want to teach and carry on research while continuing their private practice. Organization of the clinic at Emory is said to reflect a trend of the medical schools away from dependence on volunteer faculty members toward more doctor-teachers who can give a large portion of their time to teaching by being located geographically near the medical center.

FUND RAISING is under way to finance the construction of this proposed new library and auditorium building to be erected at the Columbia-Presbyterian Medical Center in New York City, where it will be utilized by the College of Physicians and Surgeons.

George Washington University

To insure better health for airmen stationed in the Arctic and other extremely cold parts of the world, the United States Air Force has granted $10,720 to the medical school for research into the nutritional effects of different diets on the body in zero temperatures.

Harvard

Dr. CHARLES S. DAVIDSON has been appointed associate physician in the Thorndike Memorial Laboratory of the Boston City Hospital and associate professor of medicine at Harvard

University. Dr. Davidson's special interests are nutrition and diseases of the blood and liver.

Dr. DEAN A. CLARK, general director of the Massachusetts General Hospital and an authority on medical care and public health, has been appointed clinical professor of preventive medicine. Dr. Clark was a member of the President's Commission on the Health Needs of the Nation. Prior to becoming chief administrator of the Massachusetts General Hospital he was medical director of the Health Insurance Plan of Greater New York.

University of Illinois

Dr. CRAIG D. BUTLER has been promoted from clinical associate professor to professor of pediatrics.

Appointments of Drs. GABRIEL LANGFELDT and ISADORE SNAPPER as lecturers in the college of medicine, with the rank of professor, have been announced.

Dr. DAVID S. RUHE, director of the Medical Audio-Visual Institute of the Association of American Medical Colleges, has been appointed clinical assistant professor of medicine.

Recent research grants include $10,000 from the American Cyanamid Company in support of work of an investigative nature in infectious diseases and related fields; $8,000 from the Teagle Foundation, Inc., for renewal of a grant in support of research in paralysis agitans, and $5,000 from Smith, Kline and French Laboratories to provide a fellowship for the current academic year.

Indiana University

An advanced workshop for medical record librarians will be held in Indianapolis, April 27-May 1. Requirements for registration are that the applicants be registered record librarians, be employed in hospitals of 200 or more beds and have an office staff of at least five under their supervision. Registration will be limited and applications must be on file April 1. Further information can be obtained by writing to DORIS GLEASON, R.R.L., executive secretary, American Association of Medical Record Librarians, 510 N. Dearborn St., Chicago 10.

Physicians from all parts of Indiana were registered for the annual postgraduate symposium on the heart February 10, with Dr. PAUL D. WHITE, Harvard; Dr. WALTER T. ZIMDAHL, University of Buffalo, and Maj. Gen. GEORGE E. ARMSTRONG, Army Surgeon General, as speakers. In the evening the panel presented a round-table discussion of heart problems, the discussion being heard by telephone at meetings of county medical societies.

Cancer of the cervix is the topic for the sixth annual postgraduate symposium on malignancy being presented March 4 at the school of medicine.

Specialists from a number of states have registered for the 33rd annual anatomical and clinical course in otorhinolaryngology being presented March 30-April 14 by the staff of the school of medicine.

College of Medical Evangelists

Dr. HAROLD MOZAR, director of the School of Tropical and Preventive Medicine, has been appointed head of the department of public health and preventive medicine effective March 1.

The department of pediatrics has received $15,000 from the United Cerebral Palsy Foundation. These funds will be used to cover the first year's operational costs of a nursery school for cerebral palsy children between the ages of one and one-half and four years. Dr. ROBERT CHINNOCK is head of the department.

University of Michigan

Recently completed at University Hospital is a new seven-story outpatient clinic erected at a cost of $3,730,000 provided by state appropriation. With the new clinic in operation, it is expected that the present level of 250,000 outpatient clinic vis-

its a year can be expanded to three times that figure. Twenty-four clinics are located in the building. There are 196 examining areas and more than a hundred offices for physicians, nurses and secretaries. Nine classrooms with facilities for film projection, demonstration and visual aid instruction are distributed among the floors.

University of Minnesota

Continuation courses in gynecology for specialists will be held April 16-18, and in gastroenterology for general physicians on April 27-29.

University of North Dakota

Dr. ROBERT G. FISCHER of the department of bacteriology has received a grant of $10,000 from the North Dakota Cancer Society to continue his research, "Studies on Rabbit Papilloma Carcinoma Complex."

Northwestern University

Dr. SAMUEL M. FEINBERG, head of the department of allergy, was the first speaker in a four-part university lecture series on family life and the forces which influence it. Dr. Feinberg spoke on human allergy. Lectures are free and are open to the public.

University of Oregon

Revised plans for the new medical school general hospital were given final approval by the Oregon State Board of Higher Education at a recent meeting, and the $4,700,000 structure was to have been advertised for construction bids beginning February 15. The plans also call for a central heating plant and laundry at an additional cost of nearly $1,500,000. Dean DAVID W. E. BAIRD said the total number of beds had

Architects conception of the projected new general hospital to be constructed at the University of Oregon. The building is scheduled for completion late in 1954 or the spring of 1955. It will contain 277 beds and facilities for teaching and research. The structure will cost an estimated $4,700,000.

been dropped from 350 to 277 to cut building costs. However, all the teaching and research functions of the original plans have been retained. The building is adapted to future expansion.

A newly formed preceptorship plan in which eight students from the medical school participated last summer appears to have been a marked success. In a report filed with the dean by a senior student, it was pointed out that physicians in Oregon who helped the students gain a practical understanding of general practice in small communities were cordial, enthusiastic and extremely interested. The preceptorship plan—while far from new to medical education—was new in Oregon last year. It was sponsored by the medical school's local Student AMA group with the approval and cooperation of the school's administration and the Oregon State Medical Society.

A check for $28,654 was given to the medical school as the initial payment of a March of Dimes grant totaling $49,804. The grant will cover a three-year period and will enable scientists in the department of bacteriology to adapt research methods as laboratory aids to the diagnosis of polio.

St. Louis University

Dr. EDWIN G. EIGEL, senior instructor in pediatrics, was recently named physician in charge of the polio unit of Saint Anthony's Hospital, which has been designated the official acute polio center by the National Foundation for Infantile Paralysis for the past several years. St. Anthony's is known as an associated hospital of the school of medicine. While the administrative duties are entirely in the hands of the hospital authorities, the university has been accorded leadership in the development of their medical and educational facilities. The hospital has established a council composed of one or more representatives of the administration of the hospital, one or more members of the staff and the dean and regent or other officers of the school of medicine.

Stanford University

The following postgraduate courses will be offered in June 1953: cardiology, June 15-19; general medicine, June 15-19; surgery and treatment of fractures and associated trauma, June 24-26; general surgery, June 22-26. Faculty members will be instructors in these courses, and the fee for each is $75. Programs are available now from the office of the dean, Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15.

Stritch School of Medicine

Two research grants totaling $22,000 have been awarded to members of the biochemistry department. Dr. HUGH J. MCDONALD, professor and chairman of the department, received a grant of $10,200 to continue his study of the separation of plasma proteins and lipoproteins from blood, using the relatively new technique known as ionography. Dr. NORTEN C. MELCHIOR, assistant professor, received a grant of $11,800 to investigate the difference in rate of movement of sodium and potassium ions in biological systems. Both grants cover a two-year period.

University of Tennessee

The postgraduate department will offer a three-day program in obstetrics and gynecology for midsouth physicians, March 11-13. The program is offered in cooperation with the John Gaston Hospital, teaching facility of the college of medicine, and will be presented under the direction of Dr. FRANK WHITACRE, chief of the division of obstetrics and gynecology.

University of Texas Medical Branch, Galveston

Dr. A. W. B. CUNNINGHAM of the

University of Edinburg has been appointed professor of pathology. He will be responsible for instruction and research on arthritis and diseases of the joints.

Dr. VERNIE STEMBRIDGE, assistant professor of pathology, has been placed in charge of the cancer program of the medical branch. He is arranging a special series of cancer exhibits for display in the medical branch library. With Dr. FRANK TOWNSEND, Lieutenant Colonel USAF (MC), of the 3700th Medical Group, Lackland Air Force Base, Dr. Stembridge has prepared for statistical analysis an index of 107,000 pathological diagnoses made at the John Sealy Hospital.

Under the direction of Dr. HUBERT WINSTON SMITH, professor of legal medicine and director of the Law-Science Institute of the University of Texas, Austin, a course in legal medicine and elements of medical legal litigation was held in Houston at the Shamrock Hotel, February 9-12.

Mr. and Mrs. ORVILLE BULLINGTON of Wichita Falls have given a bequest for the endowment of a research project at the medical branch in memory of their son, WILLIAM ORVILLE BULLINGTON. The endowment is for the support of studies on pancreatitis under the direction of Dr. RAYMOND GREGORY, director of the John Sealy Memorial Clinical Research Laboratory.

Washington University

Dr. JOHN HERWEG, instructor in pediatrics, has been named assistant dean in charge of the division of postgraduate studies. He assumes the duties of Dr. BEN EISEMAN, instructor in surgery, who will devote more time to administration of the school's part in the Mutual Security Agency exchange program.

Dr. ARTHUR KORNBERG, chief of the enzyme and metabolism section of the National Institutes of Health, arrived January 15 to begin his duties as professor of microbiology and head of the department.

A new method of anesthesia was introduced recently by Dr. ROBERT W. BARTLETT, assistant professor of clinical surgery and Dr. DOUGLAS W. EASTWOOD, director of the division of anesthesia. Their article, "Long Acting Bilateral Intercostal Nerve Block for Upper Abdominal Surgery," appeared in the December issue of *Surgery*.

Dr. ROBERT I. WATSON, formerly assistant dean and associate professor of medical psychology, left February 1 for Northwestern University where he will direct the graduate

NEW MEDICAL building now under construction on the campus of the University of Ottawa. It is expected to be completed by the fall of this year.

training program in clinical psychology and hold the rank of professor of psychology.

Wayne University

New facilities under construction at the medical school include a $6,414,000 medical science building and the 252-bed Herman Kiefer addition to Receiving Hospital, to be built at an estimated cost of $3,783,000.

Seven chemical scientists are participating this spring in the "Frontiers in Chemistry" lecture series. Cosponsored by the International Society of the Friends of the Kresge-Hooker Library and Wayne's chemistry department, the lectures will take place on Monday evenings through May 15.

Western Reserve

The School of Law began its new graduate program in legal medicine February 2, when the course in Medical Aspects in Civil Litigation met for the first time. The legal medicine class is being taught by 14 of Cleveland's leading medical men, with OLIVER C. SCHROEDER JR., associate professor of law, in charge.

University of Wisconsin

Dr. MACDONALD CRITCHLEY, dean of the institute of neurology, the National Hospital, Queen Square, London, delivered the third annual Sherrington lecture on February 20. His subject was "Tactile Thought, with Special Reference to the Blind."

PRESIDENT DARLEY NAMED HEAD OF THE UNIVERSITY OF COLORADO

Dr. Ward Darley, president of the Association of American Medical Colleges and vice-president of the University of Colorado, has been named president of the university, to be effective June 1, 1953. Dr. Darley succeeds President Robert Lawrence Stearns, who leaves the position he has held since 1939, to become associated with a private philanthropic organization.

Dr. Darley is a graduate of the University of Colorado, where he received his M.D. degree in 1929. He became associated with the university in 1944, when he was named an assistant professor of medicine. He became dean of the medical school and vice president of the university in 1949. He is an internist, a fellow of the American College of Physicians, a Diplomate of the National Board of Medical Examiners, a member of the American Heart Association and the American Rheumatism Association.

An active member of the AAMC for a number of years, Dr. Darley, in addition to his duties as Association president, also serves as chairman of the Committee on Long-Range Planning.

Audiovisual News

A Day of Postgraduate TV

The University of Maryland School of Medicine and the Maryland Academy of General Practice joined with station WBAL-TV, Baltimore, on January 15 to stage a day of postgraduate medical television at Gordon Wilson Hall—the University Hospital. This workshop of eight hours comprised 13 units of postgraduate instruction delivered by faculty teams plus a 15 minute general telecast at noon on "How the Doctor Manages to Keep Up."

The programs were presented to the practitioner audience on a black and white closed telecast system. Two studio cameras and an RCA Vidicon unit for TV microscopy were used. John A. Wagner handled programming for the postgraduate committee.

It should be recalled that the University of Maryland has been active in gaining educational TV experience through its popular year-old "Live and Help Live" health program over WBAL-TV.

Three Dimensional X-Ray Films

The University of Rochester, long a leader in development of x-ray motion pictures, recently announced the achievement of three-dimensional cinefluorography. Sydney A. Weinberg, associate in radiology, and Dr. Raymond Gramiak, fellow in radiology, have been responsible for the development in collaboration with Dr. George H. Ramsey, professor of radiology, and Dr. J. S. Watson Jr. The stereo motion picture method has been tested experimentally and is ready for clinical trials.

The principle of the new method is unique. A single camera is used. The x-ray tube and the patient are moved synchronously to create the image shift necessary for stereo perception. Two prints of the film are made and are projected onto a metallic-surfaced screen through synchronous standard projectors equipped with polaroid filters. Viewers observe the screen through polaroid glasses.

The implications of stereo cinefluorography are important in both research and clinical diagnostic senses. In addition, the third dimension certainly will dramatize sharply the teaching value of cinefluorography in the medical school.

The wide utilization of x-ray motion pictures in the schools is imminent. The concommitant development of three dimensional methods may aid strongly in the teaching values. Not the least important part of this development is that the films also can be projected through a standard projector as an ordinary x-ray motion picture.

The pioneering efforts of the University of Rochester will warrant wide teaching application as soon as the new films become available.

Sound Seminars

An interesting and potentially important experiment in auditory teaching is now under way at the University of Cincinnati. Dr. George W. Kisker, associate professor of psychology, has begun the collection and dissemination of a series of recorded lectures or discussions in psychiatry, psychology, philosophy, education and the social sciences. At present 27 recordings are available for rental or purchase in the expanding series called "Sound Seminars." Information and materials are obtainable through Dr. Kisker at 2355 Beechmont Ave., Cincinnati 30.

The concept of the "Sound Seminars" is a worthy one: to bring recordings of distinguished investigators from specialized areas in science into classrooms where the experts personally could not possibly go even if they were somehow multiplied by some process of repeated binary fission. The Telephone Extension Program of the University of Illinois College of Dentistry is a similar idea in a different scientific discipline. Such purely auditory teaching is at its best where verbal auditory learning is the primary route of teaching because of the nature of the scientific content; in many areas of psychology verbal teaching is necessarily primary. Combination of recordings with visuals may be feasible in certain cases, as with Kisker's recordings of "Speech of Mental Patients," perhaps shown in conjunction with one or several of the National Film Board of Canada's "Mental Symptoms" series.

The "Sound Seminars" have a number of real merits. They make the men of science and their personalities real, up to the point where voices alone can succeed in doing this. They are international and interdisciplinary in their selection of men. They comprise historical documents of the authorities so recorded. And they impart an undeniable authenticity which only the pioneer from the frontiers of science can give.

The recordings are available as discs at 78 and 33⅓ RPM, and as high fidelity tapes at 7½ and 3¾ inches per second, rental at $3.50 and sale at $12.50.

Heart Sounds by Tape Recording

The availability of endless loop tape recordings of the common and uncommon heart sounds, murmurs and arrhythmias, and selected heart sounds and murmurs slowed down and dissociated for more precise identification of their differences has been announced by Dr. George D. Geckeler, clinical professor of medicine at Hahnemann Medical College. Medical school instructors who are interested in duplicates of this material are urged to communicate with Dr. Geckeler.

The author's equipment for playback consists of an Ampex Tape Recorder (Model 300S), a 50-watt McIntosh Amplifier, a 15-inch Electro-Voice Speaker with a tweeter. In using the tapes of this series, it is essential that the speaker must respond to low frequencies, and the tape recorder-player must have a takeup arm with three- to four-inch excursion for adjustment to the different lengths of tape loops.

CBS Color System to Wilmot-Castle

Inasmuch as medical educators are examining color television closely for its potential contribution to graduate and postgraduate medical instruction, a shift in the supply source of CBS-designed color equipment should be noted. Wilmot-Castle Company, Rochester, N. Y., makers of scientific equipment and collaborators in the development of the special TV-centered surgical lamps first installed at the Universities of Kansas and Chicago, have assumed responsibility for development and sales of the Vericolor TV Camera Chain. New name of the color system is "Castle-CBS Color Television."

Remington-Rand, Inc., formerly handled the equipment, but has withdrawn its interests.

The Quiet One

The Film Library of the American Medical Association has added a print of the famous documentary film, "The Quiet One," to its lending library. The 70-minute film concerns the treatment of a child preschizophrenic from the slums of Harlem. It is one of the memorable film explorations of personality deviation.

The film is available for rental at a service charge of $8.

New Planning Booklet

The second booklet in a series on "Planning Schools for Use of Audio-Visual Materials" was published last month by the Department of Audio-Visual Instruction (DAVI) of the National Education Association. It is titled "Auditoriums."

Contents of the booklet include the *why* of auditorium planning, the *what* of performance standards and the *how* of achieving goals. A bibliography and a brief list of companies manufacturing audiovisual equipment for auditorium use also are included. The 36-page booklet contains a number of illustrations and diagrams.

Booklet No. 1 (Classrooms) and Booklet No. 2 (Auditoriums) are aimed primarily at instructors and students of classes in audiovisual education, library science, school administration and architecture, as well as to school board members, architects, parent groups and audiovisual dealers. Much of the material, however, can be applied to the medical school.

Copies of the new booklet and of the previous publication may be purchased from the NEA, 1201 Sixteenth St., N.W., Washington, D. C., at $1 each. Discounts are available for volume purchases.

Preparation has been started on Booklet No. 3, which will deal with the audiovisual center in schools and school systems.

Summaries of Film Reviews

These brief notes on some miscellaneous medical motion pictures are intended to afford an offhand idea of the desirability and use of the film under review. They are drawn from the detailed evaluative reviews prepared by the Medical Audio-Visual Institute of the Association of American Medical Colleges.

Smallpox and Vaccination

16 mm., color, sound, 1008 ft., 28 min.

Year of Production: revised 1946; **Country of Origin:** U.S.A.; **Producer:** New York State Department of Health; **Technical Adviser:** Ernest L. Stebbins, M.D., **Camera:** Leon A. Kreger.

Distribution: Office of Health Education, New York State Department of Health, 18 Dove St., Albany 6, N.Y., **Sale:** at cost, on application; **Loan:** in New York State. (Loan applications from outside New York State should be made via respective state health departments.)

Summary: This instructional case atlas film pictures 14 varied cases of mild endemic smallpox seen in New York State, contrasted with a fatal confluent case from Portugal. The appearance and distribution of lesions are demonstrated. Differential diagnosis with three cases of chickenpox is made. The modifying effects of vaccinia are observed following post-exposure administration. Two methods of vaccination are demonstrated. Although the material is timeless, vital and memorable, the production leaves much to be desired in organization and camera analysis. Notwithstanding its defects, the film is an essential visual experience for all students of the medical professions who may be concerned with recognition of the exanthemata.

Audience: Physicians, medical students, public health personnel, nurses.

Introduction to Aphasia

16 mm., color, sound, 1100 ft., 30 min.

Year of Production: 1949-1950; **Year of Release:** 1950; **Country of Origin:** U.S.A.; **Producer:** Churchill-Wexler Film Productions, Los Angeles, California, for Veterans Administration, Department of Medicine & Surgery; **Medical Adviser:** J. M. Neilsen, M.D.; **Script:** Bernard Gordon and Julian Zimet; **Director:** Robert B. Churchill; **Camera:** Sy Wexler; **Animation:** Ted Parmelee.

Distribution: United World Films, Inc., 1445 Park Ave., New York 29; **Sale:** address **loan** requests to Central Office Film Library, U. S. Department of Agriculture, Motion Picture Service, Court 5, South Building, Washington 25, D.C.

Note: the series on aphasia also includes "Testing and Individual Therapy for the Aphasic Patient" and "Social Adjustment for the Aphasic Patient."

Summary: This orientational film seeks to explain the nature of aphasias by localizing language functions to definite areas of the brain, and by showing how injury to these areas or interruption of connecting neurone pathways produces the several simple or combined types of language communicational disturbances. The productional skills, animation and cinematography are superior. But the underlying connectionist theory of brain localization, on which the film depends, is much embattled at this time. For students of neuroanatomy

here are the facts about ***NEO-PENIL****

THE NEW ANTIBIOTIC AGENT—derived from penicillin

—WHICH GIVES HIGHER CONCENTRATIONS IN

THE LUNG AND SPUTUM

1. *Higher concentrations in the lung*
   "... has a special affinity for lung tissue, yielding average concentrations in the lung up to five times higher than ordinary forms of penicillin, and giving levels in the lung higher than in the plasma."[1]

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   "Neo-Penil gave rise to significantly higher concentrations of penicillin in bronchial secretions than did procaine penicillin."[2]

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*T.M. Reg. U.S. Pat. Off. for penethamate hydriodide, S.K.F. (penicillin G diethylaminoethyl ester hydriodide) Patent Applied For

...and here are the results you may expect with *'NEO-PENIL'*

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"Neo-Penil has been more satisfactory than other forms of systemic penicillin in the management of the acute episodes and chronic phases of bronchopulmonary suppuration."[1]

"Our own evidence would indicate that it is a more effective form of penicillin in patients with chronic pulmonary emphysema and bronchopulmonary infection."[2]

'NEO-PENIL' is the new antibiotic agent—derived from penicillin—which gives higher concentrations in the lung and sputum.

References

1. Katz, S.: GP 6:72 (Dec.) 1952.
2. Flippin, H.F.: Chicago Session A.M.A., 1952.
3. Segal, M.S., and Dulfano, M.J.: GP 7:57 (Jan.) 1953.

Smith, Kline & French Laboratories, Philadelphia

or neurology, the film's concentrated message will be as effective as the skill of the instructor in film utilization.

Audience: Medical students, speech therapists, neurological nurses, general medical audiences.

Inside the Cell—Part I: Enzymes in Intra-Cellular Chemistry (Code PMF No. 5077a)

16 mm., color, sound, 1500 ft., 40 min.

Year of Production: 1949; **Country of Origin:** U.S.A.; **Producer:** Medical Illustration Service, Armed Forces Institute of Pathology, U.S. Army; **Scientific Advice:** Department of Pathology, University of Vermont School of Medicine.

Distribution: Address loan requests, with code number, to: Armed Forces Institute of Pathology, Medical Illustration Service, 7th Street & Independence Avenue, S.W., Washington 25, D.C.

Summary: This instructional illustrated lecture film in biochemistry presents the essentials of the energy release cycles in tissue metabolism, the interrelationship of fat and protein with carbohydrate metabolism, and certain historically decisive laboratory experiments in this complex area of knowledge. The contents are broad in scope; the film has a very high idea density, that is, it is highly concentrated; and there is superior content accuracy. There is also a serious dissociation between pictures and narration; the picture fails to solve many of its most vital visual problems of chemical reactions "inside the cell"; and, taken as a production in toto, it is hard-working and pretentious, if mediocre. Except for pinpoint utilization as a review of previously well-drilled facts of biochemistry, the film will be confusing, often monotonous, and always difficult for students' absorption or illumination.

Audience: Students of biochemistry, medical students.

Thrombosis and Embolism

16 mm., black-and-white, sound, 625 ft., 17 min.

Year of Production: 1948; **Country of Origin:** Switzerland; **Sponsor:** F. Hoffman-La Roche & Co., Ltd., Basle, Switzerland; **Producer:** Norman P. Schenker, M.D., in cooperation with the Gynecological and Obstetrical Clinic, Cantonal Hospital, Geneva; H. de Watteville, M.D., and the department for medical research, F. Hoffman-La Roche & Co., R. Jergens, M.D.; **Director:** Norman P. Schenker, M.D.; **Camera:** Ady Lumpert; **Animation:** A. Wyler.

Distribution: Medical Film Institute of the Association of American Medical Colleges, 185 North Wabash Ave., Chicago 1; **Sale:** $60. (French, German, and Spanish versions of the film are available; information on request.)

Note: The film was awarded the first prize in the Scientific Division at the International Film Festival in Venice in 1949.

Summary: This skillfully produced orientational film summarizes the clinical manifestations of thrombosis and embolism as seen characteristically in postoperative surgery, obstetrics and gynecology. It presents in vitro clotting phenomena contrasted with cinemicrographic observations of in vivo thrombus and embolus production in the experimentally traumatized veins of rabbits. Interpretations of clinical concepts are debateable, but the physiopathology demonstrated is of the most fundamental and vital interest and clarity for students of pathology.

Audience: Medical students, graduate students in specialties, pathologists, nurses in clinical training.

Journey Back (Edward Lundquist—Hemiplegic)

16 mm., black-and-white, sound, 1131 ft., 31 min.

Year of Production: 1949; **Country of Origin:** U.S.A.; **Producer:** Presentation Division, for Department of Medicine and Surgery, Veterans Administration.

Distribution: United World Films, 1445 Park Ave., New York 29; **Sale:** $38.72; V.A. Central Office Film Library, Motion Picture Section, U. S. Department of Agriculture, Washington 25, D.C.; **Loan.**

Summary: In this dramatized nontechnical case history of a patient with aphasia, hemiplegia and psychological depression, the modern methods of rehabilitation are demonstrated as they are applied to such severe neurological disabilities. The patient is followed through the stages of the rehabilitation process, out of the hospital toward a job, guided at all stages by the clinical team for total therapy. The absence of adequate psychotherapy is striking. Yet the film otherwise pictures ideal contemporary treatment presented most skillfully in the development of a moving and authentic story whose impact will be felt by a wide range of medical and lay audiences.

Audience: Lay groups interested in rehabilitation, medical professional students of several types and physical therapists.

Living with Limitations

16 mm., black-and-white, sound, 711 ft., 19 min.

Year of Production: 1950; **Country of Origin:** U.S.A.; **Producer:** Presentation Division, for Department of Medicine and Surgery, Veterans Administration.

Distribution: United World Films, 1445 Park Ave., New York 29; **Sale:** $26.41; V.A. Central Office Film Library, Motion Picture Section, U. S. Department of Agriculture, Washington 25, D.C.; **Loan.**

Summary: In a motivational non-technical film designed to indicate the need for inclusive and integrated total hospital services, three patients, one with medial meniscus disability, one with rheumatoid arthritis and one with coronary occlusion, are presented as examples of complete physical, mental, social and vocational rehabilitation. The film is well produced, accurate with the exception of its obsolete management of arthritis, and has usefulness for a wide range of medical and lay audiences.

Audience: Lay audiences, medical students in collateral courses, students of physical therapy and rehabilitation.

You Can Hear Again

16 mm., sound, black-and-white, 972 ft., 27 min.

Year of Production: 1949; **Country of Origin:** U.S.A.; **Producer:** Presentation Division, for Department of Medicine and Surgery, Veterans Administration; **Technical Adviser:** Staff of Audiology Center, Walter Reed General Hospital, U. S. Army.

Distribution: United World Films, 1445 Park Ave., New York 29; **Sale:** $34.43; V.A. Central Office Film Library, Motion Picture Section, U. S. Department of Agriculture, Washington 25, D.C.; **Loan.**

Summary: This well-produced motivational film presents the case history of a typical patient with impairment of hearing as such a case is handled through a good audiology clinic. The patient's psycho-social disturbances at home and work, the overcoming of his own resistance to treatment and the use of a hearing aid, and his readjustments following systematic training are filmed. The psychological approach of the patient's viewpoint is moving, and the film effectively presents its message in a workmanly and skilled production.

Audience: Hard-of-hearing patients and their families, medical students, general practitioners.

Embryology of the Eye

16 mm., color, sound, 1460 ft., 41 min.

Year of Production: 1950; **Country of Origin:** U.S.A.; **Sponsor:** American Academy of Ophthalmology and Otolaryngology; **Scientific Advisers:** George W. Corner, M.D., department of embryology, the Carnegie Institute of Washington, and George K. Smelser, Ph.D., College of Physicians and Surgeons, Columbia University; **Producer:** Sturgis-Grant Productions, Inc., **Script and Animation:** Dwinell Grant.

Distribution: American Academy of Ophthalmology and Otolaryngology, 100 First Avenue Building, Rochester, Minn., **Sale:** $250; **Accompanying Materials:** Filmstrip of 176 frames, $25; 176 2x2 lantern slides, $125 (glass mounting, in wooden filing box), $75 (cardboard mounting, in plastic filing box). A mimeographed text for filmstrip or lantern slides.

Summary: This authoritative instructional all-animated film describes the embryology of the eye in two parts; part one covers development of the optic cup, lens, retina, vitreous and optic nerve; part two presents the anterior eye regions and orbit, the vascular system, and the facial region. The film is basically an illustrated lecture, concentrated in detail, and rich in beautifully executed drawings, models and photographs with partial animation. Because of its structure, substance and volume of contents, effective utilization will be aided by use of the available slides or filmstrip and by use of the film in parts rather than in its entirety.

Audience: Students of embryology, ophthalmologists.

Scoliosis—Method of Correction and Fusion

16 mm., color, sound, 1083 ft., 30 min.

Year of Production: 1951; **Country of Origin:** U.S.A.; **Sponsor:** The New York Society for the Relief of the Ruptured and Crippled; **Authors:** John R. Cobb, M.D., and Philip D. Wilson, M.D., the Hospital for Special Surgery, New York; **Producer:** Sturgis-Grant Productions, Inc., **Direction and Camera:** Warren Sturgis.

Distribution: Sturgis-Grant Productions, Inc., 314 E. 46th St., New York 17; **Sale:** $150; **Rental:** $10.

Summary: This film report of a case of idiopathic scoliosis demonstrates the authors' routine steps for preoperative correction of the curvature by turnbuckle jacket, spinal fusion of the major curve, and postoperative management so far as completion of plaster fixation. Principles and indications are given in the narration, but are scarcely revealed in this specific case. The orthopedic approaches are generally accepted and the surgical performance is of high calibre. The camera coverage is well-executed and clear and instructional values are good for both orthopedists and residents in training.

Audience: Orthopedists and residents in orthopedics.

Glaucoma—What the General Practitioner Should Know

16 mm., color, sound, 835 ft., 23 min.

Year of Production: 1951; **Country of Origin:** U.S.A.; **Sponsor:** W. K. Kellogg Foundation; **Producer:** Sturgis-Grant Productions, Inc., for National Society for the Prevention of Blindness, Inc.; **Medical Advisers:** Committee on Glaucoma, National Society for the Prevention of Blindness, Willis S. Knighton, M.D., chairman; **Script and Direction:** Warren Sturgis; **Animation:** Rene Sturbelle; **Art Direction:** Dwinell Grant; **Narrator:** John Lotas.

Distribution: National Society for the Prevention of Blindness, Inc., 1790 Broadway, New York 19; **Sale:** $125; **Loan.**

Summary: This instructional film presents the incidence and pathology of glaucoma, and the signs and symptoms of its acute congestive and chronic simple types; methods of eye examination by the practitioner and specialist are shown, and therapeutic measures touched upon. The film suffers in impact from its illustrated lecture structure and from minor deficiencies, but it serves to cover high points of the disease for alerting the practitioner and providing orientation for the student.

Audience: General practitioners, internists, medical students.

A Concept of Maternal and Neonatal Care

16mm., black-and-white, sound 950 ft., 26 min.

Year of Production: 1951; **Country of Origin:** U.S.A.; **Scientific Advisers:** John Parks, M.D. and Preston A. McLendon, M.D., departments of obstetrics and pediatrics, George Washington University School of Medicine; **Producer-Director:** George C. Stoney, Medical Film Institute of the Association of American Medical Colleges; **Cameraman:** Fred Porrett; **Film Consultants:** Bernard V. Dryer and V. F. Bazilauskas, M.D.

Distribution: Medical Audio-Visual Institute of the Association of American Medical Colleges, 185 N. Wabash Ave., Chicago 1; **Loan:** $5; **Sale:** $50.

Auxiliary Materials: Discussion Guide and Bibliography.

Summary: This well-produced conceptual film reports the principles and methods of medical professional teamwork among obstetricians, pediatricians, nurses and hospital administrators which at George Washington University produces a continuity of physical and psychological care of the pregnant mother and her husband from the first prenatal visit through delivery, hospital stay and return home. The human interrelations of the medical professions and patients are emphasized throughout.

In the hospital, homelike accommodations are stressed (rooming-in). The physical plant shown is nearly ideal for embodying the concept portrayed, but the sequence showing methods for hospital modification to achieve a practical working arrangement in other settings is unconvincing by contrast. Productional skills are of high order, although the narration is somewhat below the standards of the camera work.

Utilization will be effective with all audiences who should be aware of this excellent approach to management of parents and to the development of a hospital team thoroughly oriented toward complete care of a family group.

Audience: Obstetricians and pediatricians, hospital administrators, medical students, nurses.

The Antibiotics and Terramycin

16 mm., color, sound, 750 ft., 20½ min.

Year of Production: 1952; **Country of Origin:** U.S.A.; **Sponsor:** Charles Pfizer & Co., Inc.; **Producer:** Churchill-Wexler Film Productions; **Animation:** Russell Dyson, Art Babbitt; **Background:** Jerome Bowen, Ted Parmelee; **Paintings:** Grace Mallon.

Distribution: Charles Pfizer & Co., Inc., Antibiotics Division, 11 Bartlett St., Brooklyn; **Loan** and **Sale.**

Auxiliary Material: Descriptive sheet, designed for student and practitioner notebooks.

Summary: This handsome orientational film covers the principles of antibiotic therapy, including the nature of antibiosis, the modes of action, desirable qualities and side reactions of broad spectrum antibiotics. The special biochemical properties of terramycin and its range of effectiveness against pathogenic organisms are presented through the uses of the drug in infections of various organ systems.

Very beautiful and highly skilled production, mostly in animation, is led about by verbal ideas and words on the screen; the illustrated lecture format, somewhat vague symbolisms and narrational dominance do not produce maximum effectiveness of learning.

Although there is a praiseworthy attempt to appear unbiased in the content, even greater honesty would be a great gain in the film's impact. The film can be utilized, perhaps, as a primary orientation to antibiosis for students, or as a pleasant review for practitioners.

Audience: Medical students, general practitioners, nurses, science students in colleges.

Book Reviews

Principles of Human Physiology, 11th edition

Originally written by **E. H. Starling,** M.D., F.R.C.P., C.M.G., F.R.S. New edition by **Sir Charles Lovatt Evans,** D.Sc., F.R.S., LL.D., F.R.C.P., Birmingham, emeritus professor of physiology at the University of London. With chapters on the special senses by **H. Hartridge,** M.D., Sc. D. F.R.S., emeritus professor of physiology at University of London. Lea & Febiger, Philadelphia, 1952. With 709 illustrations, some in color. 1,210 pp. with index. $11.

This edition of a standard text follows the presentation set forth in previous editions. The first nine chapters, devoted to general physiology principles, are a good reference section for medical students. The order of presentation, beginning with muscle, nerve and central nervous system, will find favor with some departments. Most sections have been revised to conform to recent information, although few references to the literature of the last decade are given. Some recently accepted changes, such as the newer terminology in respiratory volumes and improved methods for artificial respiration, are not included.

Textbook of Physiology, 11th edition

William D. Zoethout, Ph.D., professor emeritus of physiology in the Chicago College of Dental Surgery (Loyola University); **W. W. Tuttle,** Ph.D., professor of physiology, College of Medicine, State University of Iowa. The C. V. Mosby Company, St. Louis, 1952. Illustrated. 692 pp. with index. $4.75.

The authors have done a very creditable job in this revision of a standard textbook for the teaching of physiology to nursing students, pharmacy students and dental students. The new sections in respiration and metabolism are particularly good. The order of presentation is the same as in the previous edition and the printing and paper seem somewhat better.

Biochemistry of Disease, 2nd edition

M. Bodansky and **O. Bodansky.** Revised and enlarged by Oscar Bodansky, M.D., Ph.D., professor of biochemistry, Sloan-Kettering Division, Cornell University Medical College. The Macmillan Company, New York, 1952. Illustrated. 1208 pp. with index. $12.

Like the original edition written in 1939, this text was prepared with the object of making available more information concerning biochemistry, oriented to the physician interested in the various problems of clinical medicine. The material is arranged according to various clinical entities with ample attention being given to normal human biochemistry. The author has purposely avoided a general presentation of biochemical topics, leaving that to the standard texts in this field. There has not been a systematic review of all diseases, but rather the chapters are divided into systems; for example, disease of the heart and cardiovascular system, diseases of the kidney and genitourinary tract, disorders of the liver and biliary tract. The various pathological states are woven into the text.

It is a most useful text and contains excellent bibliographies on practically any subject under consideration. It is completely up to date and, for the physician who needs to keep abreast of the rapidly changing field, there is probably no better presentation available.

Aids to Surgery, 8th edition

Reginald C. B. Ledlie, M.B., B.S. (Lond.), F.R.C.S. (Eng.), surgeon, the Royal Cancer Hospital; Michael Harmer, M.A., M.B., B.Chir (Cantab.), F.R.C.S. (Eng.), assistant surgeon, the Royal Cancer Hospital. Bailliere, Tindall and Cox, London, 1952. Illustrated with drawings. 352 pp. with index. $2.25.

This volume is prepared as a student aid and has undergone eight editions. There are 28 chapters, the first five of which are devoted to general principles, trauma and hemorrhage, inflammation and infection, and surgical infective diseases and neoplasms and cysts. The remaining chapters are devoted entirely to particular areas or systems. The material is well selected, arranged and condensed in a form that makes it readily available. It is not a substitute for a textbook of surgery; only highlights are given. As the title indicates, it is prepared for the student interested primarily in a quick review of the general subject.

Aids to Osteology, 5th edition

Nils L. Eckhoff, M.S. (Lond.), F.R.C.S., surgeon, Guy's Hospital, etc. Bailliere, Tindall and Cox, London, 1952. Illustrated with drawings. 264 pp. with index. $2.

The fact that this manual has under-

gone five editions is indicative of the demand. It is a well prepared, factual description of bones of the body with illustrations indicating the muscular attachments. Its primary function would seem to be as a review manual. It contains no information not available in the ordinary textbooks of anatomy, but is much condensed and more readily accessible.

The Principles and Practice of Medicine

L. S. P. Davidson, B.A. Cantab., M.D., F.R.C.P. Ed., F.R.C.P. Lond., M.D. Oslo, physician to H. M. the Queen in Scotland and professor of medicine and clinical medicine, University of Edinburgh, with the staff of the department of medicine and associated clinical units. E. & S. Livingstone Ltd., Edinburgh & London, 1952. Illustrated. 919 pp. with index. $6.75.

The text is a systematic presentation of pathological states emphasizing the principles and practices of medicine. The style is essentially that of a medical lecturer highlighting the pertinent facts, with the inclusion of relatively small amounts of controversial material. Each chapter is well organized and uses classical headings. There are no references and very little discussion of mechanisms. It is useful largely as a reference text to obtain pertinent facts.

Diseases of the Skin, 5th edition

First compiled by the late **Robert W. MacKenna,** M.A., M.D., Ch.B. (Edin.). Present edition by **Robert M. B. MacKenna,** M.A., M.D. (Camb.), F.R.C.P. (Lond.), physician-in-charge of the dermatological department and lecturer in dermatology, St. Bartholomew's Hospital and Medical College, London. Bailliere, Tindall and Cox, London, 1952. Illustrated. 611 pp. with index. $8.

Considering its moderate cost in relation to quality and value, this book for medical students and general practitioners can be called a "best-buy" among recent dermatologic textbooks in the English language.

In remarkably concise, yet clearly detailed fashion, the author of this edition brings out the pertinent features of all ordinary skin disorders and even those of a great many of the extraordinary ones. In addition, the book presents much information about the basic fields related to dermatology such as anatomy, histopathology, mycology and radiology. While reading this book, it can be sensed that the author is an unusually able clinical dermatologist with a vast personal experience on which to base his statements.

Although not a point of criticism, the American practitioner may find the sections on therapy, written for his British colleague, somewhat unfamiliar and at variance with standard American concepts and practices.

Dermatology

Marion B. Sulzberger, M.D., professor and chairman, department of dermatology and syphilology, New York University Post-Graduate Medical School; **Jack Wolf,** M.D., associate professor of clinical dermatology and syphilology, New York University Post-Graduate Medical School. The Year Book Publishers, Inc., Chicago. 1952. Illustrated. 592 pp. with index. $10.

The latest edition of this useful book has been brought fully up to date. Its major emphasis is still the practical treatment and management of the more common skin diseases. It exposes in lucid, minute detail a great many principles and specific techniques that have been used successfully at one time or another in dermatologic case management.

Although not a complete textbook of dermatology and syphilology for the medical student, this book contains a great wealth of practical information on these subjects for him and the general practitioner, as well as for the dermatologist. It is especially likely to be of value to the beginning dermatologic specialist.

Practical Dermatology

George M. Lewis, M.D., F.A.C.P., professor of clinical medicine, Cornell University Medical College. W. B. Saunders Company, Philadelphia & London, 1952. Illustrated. 328 pp. $7.50.

This text represents an admirable attempt to reduce to bare clinical essentials the vast subject material of dermatology usually available only in ponderous textbooks. However, the condensation process in some places justifies a criticism of sketchiness. This is especially evident in Chapter 22 on metabolic disorders where, for example, two short sentences are used to cover each of the following: nevoxantho-endothelioma, Hand-Schuller-Christian disease, Niemann-Pick disease and Gaucher's disease.

The book is illustrated so profusely with well-chosen photographs of typical examples of the various diseases presented as to qualify it as a handy atlas of clinical dermatology.

Subject material, both clinical and therapeutic, is presented from an orthodox viewpoint representing the concepts

held by the majority of present-day American dermatologists. It is useful as a text for medical students and as a practical guide for non-dermatologist practitioners.

Functional Neuroanatomy, 2nd edition

Wendell J. S. Krieg, B.S. in Med., Ph.D., professor of anatomy, formerly professor of neurology and director of the Institute of Neurology, Northwestern University Medical School. With illustrations by the author. The Blakiston Company, Inc., New York, Toronto, 1952. 659 pp. with index. $9.

The second edition of this excellent textbook incorporates the important recent advances in the field. Emphasized as of particular importance is the cathode ray oscilloscope, which is currently used widely to explore the central nervous pathways, and the more generalized use of the stereotaxic machine, which is used to guide stimulating, destructive or recording electrodes. These research tools have led to recent important findings.

The illustrations are excellent in selection and reproduction. The author has added many illustrations on the gross anatomy of the brain.

Because of the quantity of new material it contains, this text can be classified essentially as a new book rather than a revised edition. Highly recommended to all students interested in the field.

Rheumatic Diseases

Eugene F. Traut, M.D., F.A.C.P., associate clinical professor of medicine, (Rush) University of Illinois. The C. V. Mosby Company, St. Louis, 1952. 192 illustrations. 942 pp. with index. $20.

This new text on the rheumatic diseases covers not only the diseases commonly recognized as such, but also describes many other disorders which cause musculo-skeletal symptoms and therefore must be understood by anyone attacking the problem of arthritis. Most of the generally accepted facts and ideas are included. When controversial points are discussed the author is careful to point out opposing views.

Dr. Traut states in the preface that to avoid repetition he will devote chapters to cause, manifestations and treatment of all the arthritides rather than deal exhaustively with kinds of arthritis having many similarities and few distinctions. The approach works well in the sections on treatment where methods and procedures can be described in detail once and their application mentioned only briefly under the heading of the individual diseases. In the chapters on etiology, pathology, symptoms and findings, it leads to considerable repetition and at times to confusion. This is bothersome when the book is read from beginning to end, and makes it more difficult to use as a reference book. Had this repetition been avoided the space saved could well have been used in adding further details to the chapters on individual diseases.

Several chapters on special fields were written by collaborators. Those on the psychologic factors in rheumatoid arthritis, the ocular manifestations and the skin in rheumatism are very good. The section on the surgical treatment of arthritis is poorly written, lacks specific details and does not mention at all new advances in the field of arthroplasty.

Dr. Traut is at his best in the excellent chapters on prognosis and general treatment in which he presents his credo on therapy and the management of chronic rheumatic patients as individuals.

Out of Step

Joseph Trenaman. Philosophical Library, New York. 223 pp. with index. $4.75.

This comprehensive study of a group of young delinquent soldiers evaluates clinically their backgrounds, offenses and treatment as an Army experiment. The author, who lived with the group of 196 soldiers for two years, describes their childhood, family background, education, work record, marital history, religious attitudes and mental status, encompassing every aspect of their personality makeup.

The study shows how a constructive program can be worked out in a difficult setting with a group who had poor interpersonal relationships and whose adjustments were marginal. Work with the group was successful and provided impetus for further treatment and research for those more disturbed.

Recommended for both the clinician and the layman.

Textbook of Surgery

Edited by **H. F. Moseley,** M.A., D.M., M.Ch. (Oxon), F.A.C.S., F.R.C.S. (Eng.) F.R.C.S. (C), assistant professor of surgery, McGill University. The C. V. Mosby Company, St. Louis, 1952. With 460 text illustrations and 46 color plates. 896 pp. with index. $15.

This textbook has as its prime objective the instruction of students and in-

Taylor—Manual of Gynecology

By E. STEWART TAYLOR, M.D.

Professor and Head of the Department of Obstetrics and Gynecology, University of Colorado School of Medicine, Denver, Colorado

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Professor of Surgery, University of Wales

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D.Sc., F.R.C.P., F.R.S., LL.D., Birmingham

Emeritus Professor of Physiology in the University of London

NEW 11th EDITION. The principles of human physiology are presented from the scientific, rather than clinical points of view in this classic work. There are, however, discussions of clinical matters which should prove of interest to students. This new edition has been enlarged by several pages and 40 new illustrations have been added. The entire text has been revised and brought fully up to date.

New 11th Edition. *1210 Pages.* *709 Illus., Some in Color.* $11.00

Seiverd—Hematology

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Chief Technician, Doctor's Clinical Laboratory;

Director of Research, The Horizon Laboratories, Sunnyslope, Arizona

NEW. Virtually everything in hematology which students are called upon to do while in training at the hospital laboratory is given here. It is based on much research made to discover what students wanted. Includes the new terminology recommended by the A.M.A. and A.S.C.P.

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terns. It is the collective effort of the surgical staffs of McGill University and the Royal Victoria Hospital, and each specialty in the field of surgery is well reviewed by the various contributors.

The book is doubly commendable in its strict adherence to brevity of description without sacrifice of thoroughness. The form and content of the text is good. The anatomy, physiology and pathology of each subject division is well integrated and the entire book is well supplemented with diagrams, pictures and photographs to an extent far superior to other surgery texts.

Aside from a thorough discussion of the fundamentals of surgical technique and care such as pre- and postoperative management, chemotherapy and anesthesia, the book provides information on all of the subspecialities in surgery and the recent advances made in technique and thinking in the problems of surgery. While the discussion of electrolyte and fluid balance and the use of parenteral fluids in surgery is not as detailed as some other chapters, it is presented adequately and the necessary abbreviation of this subject is well compensated for by excellent discussions on the surgery of portal hypertension, thoracic and cardiovascular and peripheral vascular surgery and other more recent surgical developments.

The editors have produced a concise, thorough and up-to-date textbook of surgery which is well recommended to all students of medicine.

Electrocardiography in Practice, 3rd edition

Ashton Graybiel, M.D., director of research, United States Naval School of Aviation Medicine; **Paul D. White,** M.D., executive director, National Advisory Heart Council; **Louise Wheeler,** A.M., executive secretary, the cardiac laboratory, Massachusetts General Hospital; **Conger Williams,** M.D., instructor in medicine, Harvard Medical School. Illustrated. W. B. Saunders Company, Philadelphia, London, 1952. 378 pp. $10.

The third edition of this book represents a complete revision of the previous volumes by these authors, together with a welcome change of format. The textual and illustrative material has been amplified to include a discussion of the unipolar precordial and extremity leads. In addition, a brief introduction to three-dimensional spatial vectoro-cardiography is presented. Of special interest is Part I, in which the authors present a concise but comprehensive history of the development of modern theories of electrocardiography.

Although several textbooks on this subject have appeared in recent years, this volume continues to serve a unique function. As intimated by the authors, it is not intended to serve as a text, but rather as an atlas for the practitioner. This end is achieved by the numerous, carefully selected and superbly reproduced example electrocardiograms.

Biological Chemistry

Alexander Gero, Ph.D., associate professor of pharmacology, Hahnemann Medical College, Philadelphia. The Blakiston Company, Inc., New York, Toronto. Illustrated with diagrams. 340 pp. $5.

The author has attempted rather successfully to transfer the emphasis from the biological to the chemical in this text on biochemistry. The current needs for medical or dental schools or for graduate studies in the sciences call for more organic and physical chemistry than is usually taught or available in the standard text.

This book is written primarily for the student. The content is well organized. The increasing number of medical graduates undertaking complex research calls for more exposure to the subject matter contained in this book. It should become a highly acceptable text.

Logan Turner's Diseases of the Nose, Throat and Ear, 5th edition

Edited by doctors **Harry Gold,** managing editor, **David P. Barr, Frank C. Ferguson Jr., McKeen Cattell, Frank Glenn** and **George Reader.** The Macmillan Company, New York, 1952, 295 pp. $4.

This is a new edition of a well-known textbook formerly in wide use by medical students. The last edition was published a few years before Logan Turner's death in 1939. Necessarily with the long delay between publications, extensive revision was necessary. The whole field of antibiotic therapy, which is of particular importance in otolaryngology, developed in the period between the two editions.

The book has retained its old format. The writing is clear and the presentation of the subject matter indicates that the contributors have seasoned clinical judgment. Presentations of the six contributors have been well balanced and integrated into a good over-all account of the many phases of this specialty.

The illustrations could be improved. A more detailed discussion of the modern physiology of the middle and inner ear and some reference to the nasal plastic approach to combined deformities of the septum and external nasal pyramid would seem to be indicated.

On the whole, this is an excellent book for the medical student and general practitioner.

Congenital Anomalies of the Heart and Great Vessels

Maurice A. Schnitker, B.S., M.D., F.A.C.P., director of medicine, St. Vincent's Hospital. Oxford University Press, New York, 1952. Illustrated. 306 pp. with index. $8.

Dr. Schnitker has stressed basic principles of developmental anatomy and pathological physiology throughout this text and has integrated these fundamental disciplines with his and other astute clinical observations. It is this masterful integration of facts gleaned from the vast literature of the basic scientist and the clinician that makes this book one that can be recommended for the practitioner and the internist and as a reference for the cardiologist.

Illustrations and tables have been carefully selected and clearly reproduced. The value of the text would be further enhanced by the inclusion of illustrative x-rays, angiocardiograms and electrocardiograms.

Applied Physiology, 9th edition

Samson Wright, M.D., F.R.C.P., John Astor professor of physiology, University of London, with the collaboration of **Montague Maizels,** M.D., F.R.C.P., professor of clinical pathology, University of London, and **John B. Jepson,** D. Phil, A.R.I.C., senior lecturer in biochemistry, Courtauld Institute of Biochemistry. Oxford University Press, London, New York & Toronto, 1952. Illustrated. 1,190 pp. with index. $9.

This textbook, designed primarily for medical students, has three outstanding virtues. First, the basic organization and emphasis rests on the concept of homeostasis as a unifying principle throughout physiology; second, comprehensive amounts of biochemical data are introduced, thus providing a necessary understanding of the interdependence between the two disciplines; and third, the correlation between basic physiological concepts and clinical medicine is given in an impressive and readily understandable fashion.

A wealth of clinical material has been included. This material is in many instances quite cogent and is used to exemplify the physiological principles under discussion rather than simply appearing as an addendum of medical definitions at the end of each chapter. However, this edition suffers from the tendency of physiology textbooks to attempt to achieve encyclopedic proportions. Since no single volume could satisfy the needs of the clinician or specialist, inclusion of some of the clinical material appears somewhat inappropriate, especially since the authors have made no attempt to provide more than a skeleton bibliography consisting of what they believe to be key papers. It is perhaps regrettable that no ninth editions appear in which the number of pages has been reduced and the material consolidated to a size and consistency digestible by a first-year student.

This text contains over 200 new figures and an admirable appendix which instructs the reader, by detailed example, in the art of critically analyzing laboratory records.

Correlative Cardiology; An Integration of Cardiac Function and the Management of Cardiac Disease

Carl F. Shaffer, M.D., F.A.C.P., associate professor of clinical medicine, Baylor University College of Medicine; **Don W. Chapman,** M.D., F.A.C.P., associate professor of medicine, Baylor University College of Medicine. W. B. Saunders Company, Philadelphia and London, 1952. Illustrated. 525 pp. with index. $9.50.

This book consists of an outline of various phases of cardiac physiology and heart disease. Its format is much like that of the Sampson Wright textbook on physiology. Any attempt to outline a subject as large as this necessarily will result in oversimplification, and this obviously is the case with this text. While valuable information may be included in a presentation of this sort, it is not to be recommended for the serious student of cardiology who would like to rest his knowledge on a firm basis.

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

The Basis of Clinical Neurology, 3rd edition

Samuel Brock, M.D., professor of neurology, College of Medicine, New York University. The Williams & Wilkins Co., Baltimore, 1953. 510 pp. with index. Illustrated. $7.

Pheochromocytoma and the General Practitioner

Joseph L. DeCourcy, M.D., and **Cornelius B. DeCourcy,** M.D. DeCourcy Clinic, Cincinnati, 1952. 165 pp. with index.

Medicine of the Year, 1952, 4th issue

Editor-in-Chief, **John B. Youmans,** M.D., dean, School of Medicine, Vanderbilt University. J. B. Lippincott Company, Philadelphia, London, Montreal, 1953. 164 pp. with index.

The Atom Story

J. G. Feinberg, M.Sc. Philosophical Library, New York, 1953. Illustrated. 243 pp. with index. $4.75.

Practice of Psychiatry

William S. Sadler, M.D., F.A.P.A. The C. V. Mosby Company, St. Louis, 1953. 1183 pp. with index. $15.

Diseases of the Heart and Arteries, 4th edition

George R. Herrmann, M.S., M.D., Ph.D., F.A.C.P., professor of medicine, University of Texas. 215 text illustrations and four color plates. The C. V. Mosby Company, St. Louis, 1952. 652 pp. with index. $12.50.

Clinical Electrocardiography in Children

Gertrude H. B. Nicolson, M.D., chief of children's cardiac clinic and assistant visiting physician to the children's service at St. Luke's Hospital; instructor in pediatrics at Columbia University. The Macmillan Company, New York, 1953. Illustrated. 118 pp. with index. $3.25.

Office Management of Ocular Diseases

William F. Hughes Jr., M.D., professor and head, department of ophthalmology, University of Illinois College of Medicine. The Year Book Publishers, Inc., Chicago, 1953. Illustrated. 452 pp. with index. $9.

The Microbiological Assay of the Vitamin B-Complex and Amino Acids

E. C. Barton-Wright, D.Sc., F.R.I.C., Pitman Publishing Corporation, New York, Toronto, London, 1952. Illustrated with graphs and charts. 179 pp. with index. $4.

Handbook of Orthopaedic Surgery, 4th edition

Alfred Rives Shands Jr., B.A., M.D., medical director of the Alfred I. duPont Institute of the Nemours Foundation; **Richard Beverly Raney,** B.A., M.D., professor of surgery in orthopedic surgery, University of North Carolina. The C. V. Mosby Company, St. Louis, 1952. Illustrated. 644 pp. with index. $8.

Pathology in Surgery

Edwin F. Hirsch, Ph.D., M.D., director of the Henry Baird Favill Laboratory and pathologist of St. Luke's Hospital, Chicago. The Williams & Wilkins Company, Baltimore, 1953. 388 photographs. 474 pp. with index. $10.

Endocrine Treatment in General Practice

Edited by **Max A. Goldzieher,** M.D., and **Joseph W. Goldzieher,** M.D., Springer Publishing Company, Inc., New York, 1953. Illustrated. 474 pp. with index. $8.

Use of Antibiotics in Tropical Diseases

Annals of the New York Academy of Sciences, Vol. 55, Art. 6. Edited by **Roy Waldo Miner.** Illustrated. 318 pp. $4.

Science vs. Chiropractic. Kathleen Cassidy Doyle. Public Affairs Pamphlet No. 191. Illustrated. 28 pp. 25 cents.

Food for Your Heart. By the department of nutrition, Harvard School of Public Health. The American Heart Association, Inc., 44 E. 23rd St., New York 10. 48 pp. 25 cents.

Alcoholism—A Sickness That Can Be Beaten. Alton L. Blakeslee. Public Affairs Pamphlet No. 118. Illustrated. 32 pp. 25 cents.

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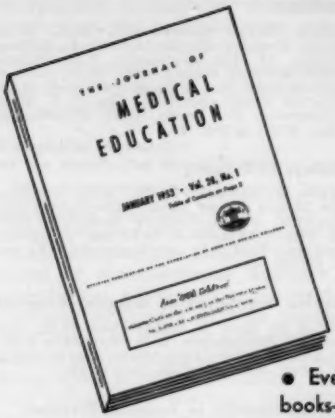

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• Applications are invited for the post of assistant or associate professor of BIOCHEMISTRY at the University of Alberta, duties to commence July 1, 1953. Further information may be obtained from Dr. J. W. Scott, dean of medicine, University of Alberta, Edmonton, Canada.

• A one-year salaried training position will be available in the consultation CLINIC FOR EPILEPSY, University of Illinois College of Medicine, beginning July 1, 1953. Address application or requests for further information to: Dr. Frederic A. Gibbs, 912 S. Wood St., Chicago 12.

• PHYSIOLOGIST, Ph.D. or M.D. Desired for permanent position in physiology department. Preference given to those with interest in cardiovascular or neurophysiology. Teaching program of 16 weeks duration; remainder of year available for research. Further information may be obtained from: Dr. Harold C. Wiggers, professor of physiology of the College of Medicine, Albany Medical College, Union University, Albany, N. Y.

• The department of MICROBIOLOGY and IMMUNOLOGY of a medical school in the midwest is scheduled to move into new and enlarged quarters toward the end of 1953. The staff is to be increased by two full-time members. Those interested and experienced in teaching medical students are requested to give information concerning their personal history and qualifications and the desired rank and salary. Address: V-7.

• ASSISTANT DEAN, M.D. Desired for position in eastern medical school with appointment in department of medicine. Should have interest in spending one-half to two-thirds time dealing with problems of medical students, admissions, educational programs for interns and residents as well as continuation instruction for postgraduates. Remainder of time available for teaching or research in clinical medicine. Address: V-8.

Personnel Available

• PHYSICAL THERAPIST—EDUCATOR: man, 38, M.S. and doctor of education. Experienced in teaching. Specialty—preparation of teachers of physical therapy. Seeks opportunity to develop curriculum and opportunity for research. Can act as educational consultant to other medical departments; take charge of inservice training programs. Kappa Delta Pi and professional societies. Excellent references. Available on short notice. Address: A-3.

• Ph. D. in all BASIC SCIENCES: man. Assistant professor at present. Training in all basic sciences. Teaching experience in anatomy (gross and microscopic), physiology and pathology (medical and clinical). Minimum salary stipulated. Address: A-31.

• SURGEON: Interested in teaching and research; Certified by the American Board of Surgery; Fellow, American College of Surgeons; two years teaching experience in clinical surgery; married; category 4 service U.S. Navy. Full-time work preferred. Address: A-32.

• PHYSIOLOGIST — Ph.D: age 36. Active researcher and teacher at university level, desires teaching-research position in medical school. Fine scholastic record, publications, National Research Council fellow, five years' teaching experience human, general physiology. Position with permanence desired, but will consider appointment permitting working for M.D. degree. Available after June 1953. Address: A-22.

• SURGEON: 32, interested in career in academic surgery. Anticipates completion of American Board of Surgery certification March

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school, department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns must reach the Journal office, 185 N. Wabash Ave., Chicago 1, not later than the 10th of the month preceding publication. Deadline for the April issue will be March 16.

1953; application accepted for fellowship in the American College of Surgeons for 1953. Currently holds staff appointment in department of surgery of a medical school. Wife and two children. Has training in basic research and anxious for opportunities in this direction. Full-time position preferred. Address: A-33.

• ANATOMIST: Ph.D., assistant professor, male, married. Four years teaching experience in medical school gross anatomy. Research and interest in neuroanatomy. Available August 1953. Address: A-34.

• PATHOLOGIST: M.D., man 41, married. Unusually fine and varied experience; teaching, research, hospital laboratory, administration, planning and construction; particularly competent in pathologic anatomy; at present associate professor and director of laboratories; seeks academic and/or hospital appointment. Address: A-35.

• NEUROANATOMIST: man, 43, married, Ph.D., member American Association of Anatomists. Experience: seven years teaching neuroanatomy, four years teaching gross anatomy; basic neurological research; administration; membership on several medical school administrative committees; original training under highly distinguished neuroanatomists. Publications. Member of scientific and scholastic societies. Noteworthy references. Experience includes reorganization of premedical program in large college with salutary results. Desires medical school position where interests in teaching, research and administration can be fulfilled. Available July 1953. Address: A-36.

• ANATOMIST: Ph.D., man, 40. Desires teaching position in anatomy (gross or microscopic). Teaching experience in histology, embryology and gross anatomy in dental and medical schools. Publications. Excellent references. Now employed but may be available on short notice. Address: A-37.

• BACTERIOLOGIST; PARASITOLOGIST; PUBLIC HEALTH INSTRUCTOR: Ph.D., man. Desires teaching position in bacteriology, parasitology or preventive medicine. Teaching experience in these subjects in liberal arts and professional schools. Now employed but may be available on short notice. Publications. Excellent references. Address: A-38.

• INTERNIST: 35 years. Certified. Would like full-time teaching position, associate professor of medicine or higher in medical school where there is an opportunity for organized research. Interested in metabolism and isotope research. Has been connected with teaching university since getting out of service. Associate in medicine 1951. Numerous publications. Address: A-39.

• OPHTHALMOLOGIST: Age 33, married, priority 4, certified, advanced degree in ophthalmology. Engaged now in medical school teaching, research and private practice. Publications include article, monograph and review. Trained in major American institutions. Desires full-time opportunity to combine teaching, research and clinical work. Address: A-40.

• BIOCHEMIST: Ph.D., age 26, married. Four years' research on the biochemistry of human arterial smooth muscle, contraction and tonus mechanisms in relation to hypertension and arteriosclerosis. Desires opportunity to continue biochemical research on the arterial wall under cardiovascular investigator, with possibility of study toward M.D. degree. Available October 1953 or June 1954. Address: A-41.

• BIOCHEMIST: Man, 32, family, Protestant. B.S. chemistry; M.S., Ph.D., biochemistry. Minors: physiology, microbiology, organic chemistry. Societies. Publications; book in progress. 3 years experience undergraduate, 4 years graduate assistant, 1 year industrial chemist, 3 years army medical technologist, 1 year cancer research. Currently 2 years assistant professor biochemistry in medical school. Research interests: carbohydrates, nucleic acids, analytical biochemistry, clinical chemistry. Desires change for professional, financial advancement. Available 2-3 months after job agreement is concluded. Address: A-42.

• BIOCHEMIST-PHYSIOLOGIST: Man, 30, married, Ph.D. Now assistant professor at medical college. Enthusiastic teacher with several years of research experience. Desires academic position at medical, dental or pharmacy school or liberal arts college where good teaching is considered important. Interested in graduate training program and fundamental research, if available. Administrative duties are very welcome. Publications. Location immaterial. Rank and salary open. Address: A-47.

• PHARMACOLOGIST-BIOCHEMIST: Ph.D. 1953. Age 28, married, veteran. Phi Beta Kappa, Sigma Xi. Diversified background, strong chemical training. Some teaching experience. Desires academic position. Address: A-46.

• PHARMACOLOGIST: M.D., Ph.D. Assistant professor, medical school, age 38, married. Eight years experience teaching pharmacology to medical, dental and pharmacy students. Research experience with systemic antiinfectives and autonomic drugs. Publications. Desires teaching and/or research position. References. Address: A-45.

• ANATOMIST: 32, married, children. National Cancer Institute fellow (1 year); experience in all branches of anatomy. Publications on request. Interested in research as well as teaching. Excellent references. Available after July 1, 1953. Address: A-44.

• BIOCHEMIST or PHYSIOLOGIST: Ph.D., age 31. Active researcher and teacher at university medical school for five years. Fine scholastic record, public health senior research fellow, many publications. Interested in position allowing work for M.D. degree. Address: A-43.

• MAMMALIAN and GENERAL PHYSIOLOGIST: A.B., Ph.D., man 31, married. Will graduate June. Six years teaching experience in dental, medical, graduate and undergraduate courses, laboratories and lectures. Publications. Member of scientific societies. Wide and varied interests. Four years in medical department of army; Rank, 1st Lt., inactive reserve. Prefer midwestern appointment. Available after June 1953. Address: A-48.

• TEACHING FELLOWSHIP — OTOLARYNGOLOGY: special interest in problems of tumors in region of head and neck, particularly those related to cancer of mouth, larynx and pharynx. Man, single, 37. M.D. (surgeon) University of Cordoba. Head of clinic and assistant chief, department of otolaryngology,

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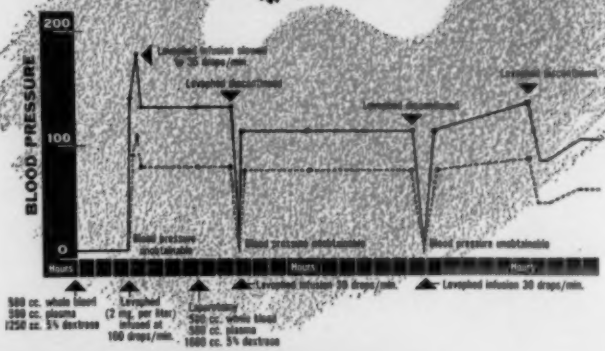

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Hospital Espanol, Cordoba, 3 years; intern and resident, U.S., 1949-1951. Member scientific societies. Excellent references. Argentine citizen; good command of English. Address: A-49.

• TEACHING FELLOWSHIP — GYNECOLOGY: Man, 41, married. M.D., University of Cordoba. Supervision of gynecological patients 1939 to present, 2 years teaching in medical school and hospital. Member scientific societies. Publications. Argentine citizen; good command of English. Address: A-50.

FACULTY POSTS: (a) Prof and Chairman, dept pediatrics; important med school, also possibility appt ped-in-chief, affil children's hosp. (b) Prof and Chairman, dept of neuropsychiatry; univ med school and its affil 400-bed hosp. (c) Prof of anatomy; important univ med school and its 600-bed hosp; new post; city 400,000. (e) Dipl Amer Bd Pediatrics well trained in pediatric allergy; faculty appt; univ med school. (f) Internist trained in rheumatology with strong interest in arthritis; to assoc with widely recognized and distinguished specialist arthritic diseases and prof of medicine, important univ med school; oppty faculty appointment. If none of these openings meet your requirements let us prepare an individual survey for you. Please send for our ANALYSIS form. STRICTLY CONFIDENTIAL.

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M. Burneice Larson, director
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FACULTY POSTS: (a) Professors and chairmen, departments medicine, obstetrics—gynecology, pediatrics, radiology, surgery, (b) Assistant dean; two-year contract; foreign assignment. (c) Assistant professor or instructor, department of pathology. (d) Anatomist; M.D. required; rank dependent qualifications. (e) Pharmacologist; full time teaching; graduate school; rank open; $6-8000. (f) Anesthesiologist; important faculty post. For further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

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